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Member Audit Bureau of Circulation
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SPECIALIZED OIL JOURNALS

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The Oil Man's Calendar

MAR. 23-25	American Society of Mechanical Engineers, Houston, Texas.
26-27	American Petroleum Institute, Mid-Continent District, Tulsa.
APRIL 9-10	American Petroleum Institute, Eastern District, Pittsburgh.
16-17	National Petroleum Association, Cleveland, Ohio.
21-23	Southwestern Gas Measurement Short Course, Norman, Okla.
21-24	American Association of Petroleum Geologists, Denver, Colorado.
22-24	Petroleum Industry Electrical Association, Shreveport, La.
MAY 13-15	Natural Gasoline Association, Mayo Hotel, Tulsa.
	A.P.I. Mid-Year Meeting Canceled.
27-28	Interstate Oil Compact Commission, Little Rock, Arkansas.
OCT. 8-10	Texas Mid-Continent Oil & Gas Association, Dallas.
NOV. 9-13	American Petroleum Institute, Chicago.

Contents . March 23, 1942

Volume 105, Number 3

The Changing Panorama..... 7

Feature Section:

Washington Roundup 9
By B. F. LINZ

Barges Offer Partial Solution to East Coast Shortage... 13
By L. J. LOGAN

Value of Planned and Controlled Operations Demonstrated by Successful Shallow Water Flood.. 17
By GILBERT M. WILSON

Wild Gas Well Is Controlled..... 23

Gasoline-Driven Pipe Threader Skid-Mounted for Use on Barges in Marine Drilling Operations..... 25
By GORDON B. NICHOLSON

Steel Cost of Primary vs Secondary Recovery..... 28
By LYNN O. CONVERSE

Preference Rating Order No. P-98, Extended and Amended 33

Break the Scrap Deadlock Now!..... 42
By ELTON STERRETT

Practical Operating Hints for the Drilling Rig..... 38

Practical Operating Hints for the Production Man..... 40

News Section and Index..... 43

Looking Ahead with the Editor..... 2

Notes for the Equipment Buyer and User..... 63

Squeaks from the Bull Wheel..... 62

Index to Advertisers..... 64

Published every Monday. Single Copies 15 cents (Except Special Issues). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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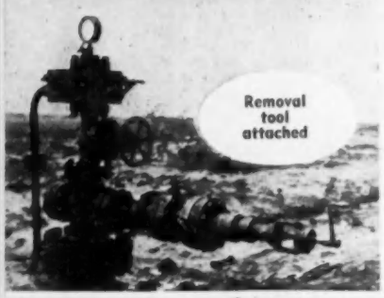

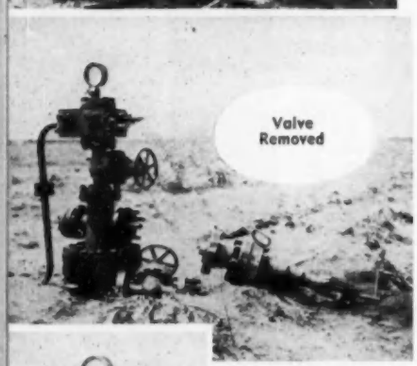

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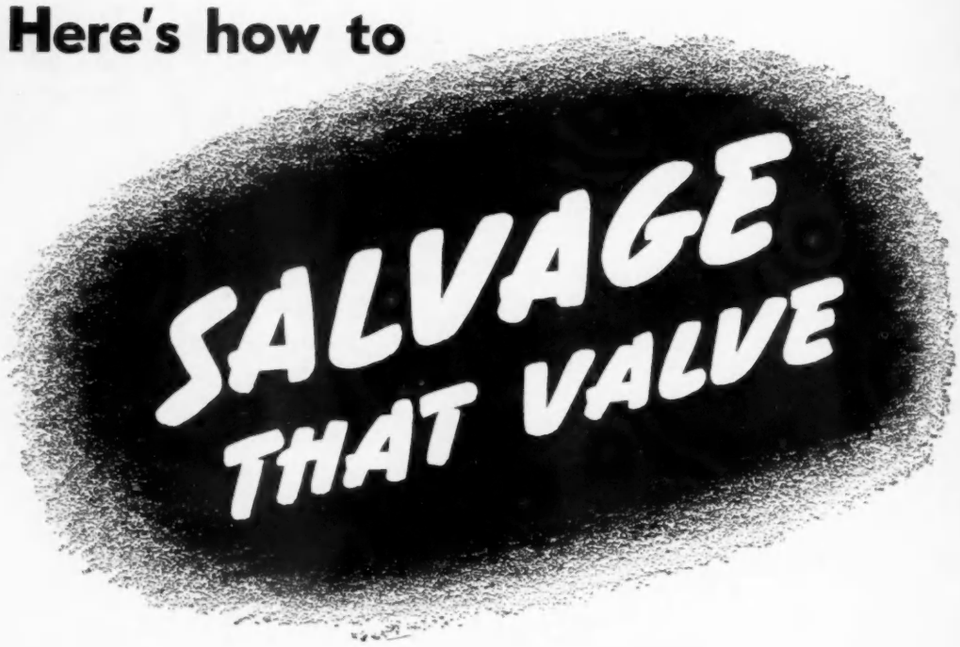

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The Changing Panorama

Drastic Production Changes Are Due

EXCEEDINGLY painful dislocations and drastic changes in the production allocation set-up are forthcoming shortly. Currently the prime requisite in determining field allocations is not the ability to produce, but what kinds or qualities of crudes are produced.

Both crude oil and gasoline going to storage in large quantities while fuel oil is being withdrawn in big volumes, points out more clearly the necessity of the industry quickly rearranging its production operations to a war-time basis. We have been confronted, in the past, with periodic situations in which we have had difficulties in balancing the output of products, but we seem slow to realize that conditions are different now.

We cannot anticipate any big summer spurt in gasoline consumption that will reduce the all-time high volume of these stocks, but can foresee increased demand for certain other products due to military demand. This means that those fields which produce crudes especially suited for making vital military products (aviation gasoline, fuel oil, lubricants, butadiene and toluene) with recovery of the least amount of regular-grade motor gasoline must be favored at the expense of other pools, if the industry's stability is not to be wrecked by the production of too much gasoline. All fields must be classified immediately according to their ability to meet military requirements, this being the first step in getting prepared to adjust the industry to its new set of conditions.

Already exemption of fields producing crude oil suited for aviation gasoline from recent sharp reductions in Texas field output have been witnessed, and now in California it is proposed that the light oil zone in the Wilmington-Long Beach Harbor field be shut in entirely so that the heavy oil horizon production be increased. These moves are but the beginning of drastic production allocation changes that will come in the future.

Many complicated factors are involved in adoption of such action on a wide scale. There will be painful individual dislocations, in which many operators will be hurt and fields may produce inequitably from a strict productivity standpoint. But victory is the first consideration today, and the industry can assist in promoting economic stability by balancing output with demand, and thus help to permit oil to meet its war assignments.

Canada puts its gasoline rationing plan into effect April 1, and the regulations are decidedly all-inclusive, as the following provision explaining to whom the plan shall apply emphatically demonstratess "Words in the singular shall include the plural and words in the plural shall include the singular; and the masculine, feminine or neuter gender respectively shall be deemed to denote either the neuter or the feminine or the masculine where the context so requires."

Not even the neuters can pull any fast stuff under that plan.

Proration Extended To Oil Consumers

TO CURTAIL transportation waste, and thus conserve tires and ease bus traffic, highly industrialized Pontiac, Michigan, on March 16 placed in operation a plan that may provide a pattern for other industrial cities. The whole scheme of the plan is to stagger use of buses so a larger number may ride without over-crowding existing facilities, and to promote multiple riding in private cars.

To stagger use of the buses—schools open and close half an hour later, stores in the central shopping section open and close an hour later, and various factories vary their shifts so all workers will not be trying to get to their jobs at the same time. Pay days eventually will be staggered through the week, to spread out shopper's use of buses. It is estimated that these rearrangements of bus schedules will permit double the number to ride without jamming traffic.

Those who continue to use private automobiles are urged to ride together. Real impetus is being placed on this phase, with the idea being promoted by windshield stickers, newspaper publicity and radio programs. Industrial parking lots have worked out plans whereby those residing in one section of the city will park together, to make it easier to swap rides.

To the oil industry this means there will be less gasoline used currently in Pontiac or another city that adopts the plan, but cars will last longer and therefore such programs mean that consumption of gasoline by civilian motorists will be "prorated" over a longer period.

A Few Reasons Why It Can't Be Done!

BEHIND the indicated excessive requirements of crude-oil production and high refinery throughput, despite a diminishing demand for gasoline, is the fact that refining methods have changed in 20 years. Some might think the need for more fuel oil and less gasoline could be met by reverting to simple skimming, with fuel oil the objective, and lighter materials to run as they will.

The refining industry has ample skimming capacity but there is a limitation on fuel oil output due to present flash and fire specifications. Instead of moving part of the fuel oil from skimming over to the cracking units, its full output would be available for military and industrial use. By such practice less crude oil would be charged to stills, its percentage of fuel oil would be higher, and its percentages of distillates would be less.

But three of the four primary war requirements of refining are dependent upon cracking-still throughput. They are aviation gasoline, toluene and synthetic rubber. The other is aviation lubricants.

Cracking Furnishes the Gases

Cracking stills produce fixed gases, which until seven years ago were either a waste product or usable only as fuel. Until then these gases could not be liquefied. Then research came along with

polymerization. It is a big word, which simply means that a gas can be liquefied when put in contact with a catalyst, another big word. A catalyst is a chemical or oxide, which causes a chemical reaction but does not become a part of the reaction. In polymerization one of the catalysts is solid hydrochloric acid. It converts a cracking still gas into a valuable ingredient of motor fuel but it remains an acid.

Aviation Gas From Cracking

Aviation motor fuel is dependent on cracking-still gases for part of its makeup. Again research produced a catalytic process to accomplish the reaction. Most widely used of these processes is alkylation. Here the catalyst is sulfuric acid, a liquid. Two gases, isobutane and those from the cracking still, are introduced into the unit along with the acid and the result is a liquid of 100-octane rating.

Starting point for aviation gasoline is a distillate identical with that in ordinary motor fuel. The higher its octane rating the less of other ingredients it will need. Since gasoline from cracking is usually of higher octane value than that from straight skimming, the cracking stills are essential even for the base product for the 100-octane aviation motor fuel.

Cracked gasoline, some polymerized liquid, some alkylate and some tetraethyl lead make up most of the higher-octane aviation gasoline.

Details of the manufacture of toluene have not been made public. This is a petroleum product which becomes part of the explosive TNT. Cracking stills produce the special cut, which goes to the toluene plant, where further processing converts part of the special cut to the exact specifications of toluene. The unconverted part goes back to the refining units to go into motor fuel.

Gases and Rubber

The part the oil industry must play in providing synthetic rubber again amounts to increased demand on the gases from cracking stills. For the purpose the industry will provide only an ingredient, just as it provides an ingredient for many soap products. The ingredient is known as butadiene, which again is a gas. It may start with butane from a natural gasoline plant or from the gas from a cracking still. No details have been made public on the method of converting butane into butadiene. With heat, pressure and a catalyst, however, it is being done, and enough of it must be made to provide perhaps 70 percent of the total rubber requirements of the military program. The remainder will come from the coal-tar industry and from the chemical industry. The rubber industry will put the several together as a finished synthetic substitute for rubber.

Thus the gases have become the choice requirement of the oil industry. Regardless of how much gasoline has to be made or what becomes of it, the military program must have the output of cracking stills. That is the reason that testimony of experts of OPC before the Interstate Commerce Committee of the House of Representatives three weeks ago revealed the rather startling figures indicating that 2,600,000 barrels of crude oil a day would be required to supply these war products in 1942 and that 3,600,000 barrels of crude oil a day would be required in 1943 for the same purpose, irrespective of the demand for ordinary petroleum products such as motor gasoline and fuel oil.

The 380,000 oil wells of the United States could, if need be, produce more oil than the whole world produced last year by abandoning temporarily the policy of conservation—John D. Gill, Economist, The Atlantic Refining Company, before American Society of Mechanical Engineers.

A Sure Way to Stop Needed Wildcatting

THERE can be no doubt but that the oil industry has profited by its 27½ percent depletion allowance, which Treasurer Morgenthau terms a special privilege and would like to take away. However, it is easy to overlook its benefits to the public and nation as well as to the industry.

To a large extent, the depletion allowance is responsible for the extensive development that has given this country the world's most abundant and cheap supply of motor fuel and other petroleum products, without which the nation today would be in much graver military peril. Every ship, plane, tank and truck needs petroleum fuel and lubricants to go into action and every armament industry needs them to keep production rolling.

Only the United States and Russia have a sufficient supply of readily available petroleum to embark upon a war-production program such as this country is undertaking. When Congress enacted the depletion allowance about 15 years ago, unproduced known oil reserves of the country were estimated to total but 6 or 7 billion barrels. Today, although meanwhile consumption has risen many fold, known unproduced oil reserves are calculated to total 20 billion barrels. Were it not for the depletion allowance, such extensive development would not have taken place.

Without the depletion allowance, prospecting activity of the industry, which involves great financial risks that annually reach hundreds of millions of dollars will suffer at a time when expansion is being urged as a national-defense measure. Without the depletion allowance, only higher prices, which are practically beyond hope for the duration, or direct government subsidy would permit the industry to continue wildcatting.

All are against special tax privileges, but there are some measures that might appear in this classification that should not be tossed out the window until all factors involved and their probable repercussions are given careful consideration.

Due to record-breaking tank-car shipments to East Coast, Mid-Continent refiners are facing shortage of tank cars. While shortage as yet has not assumed serious proportions, it is likely to do so in the very near future. This indicates shipping troubles of the Gulf and East Coasts are to spread to the Mid-Continent and Middle West areas, with the possibility of furthering rationing.

Fewer completions are a certainty in view of 40-percent drop in number of drilling wells since January 1.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

By B. F. LINZ
Washington Correspondent

A CUTTING back of April crude oil production to a point where it will fall approximately 7,500,000 barrels short of demand gave concrete evidence last week of the extent to which transportation facilities have been crippled by the war.

Recommended allocations of production of all petroleum liquids — condensate and natural gas derivatives as well as crude — for April provided for only 3,656,800 barrels a day, compared with the original recommendation for March of 3,996,800 barrels (for crude alone) and a revised recommendation of 3,792,700 barrels; demand for the coming month was forecast by the Bureau of Mines as 3,730,000 barrels.

The sharpest cuts will be made in Texas, Louisiana, New Mexico and Mississippi, whose original allocation of 2,010,700 barrels for March was reduced this month to 1,806,600 barrels and which will be permitted for April only 1,582,800 barrels. Only three other states were given reductions from their March allocation, in each instance small.

For full particulars see OPC April crude allocations page 45

Announcement of the April recommendations followed the disclosure that card rationing of gasoline will be imposed within six weeks or so and intimations that rationing of heating oils may be necessary next winter, in New England if nowhere else.

General committees for Districts 1, 2 and 3 will meet with OPC officials March 23 to consider the East Coast situation and survey the possibilities of getting additional supplies into the territory.

The conference is expected to give thought to the steadily increasing inventories in the Gulf area, which is becoming one of the most pressing problems of the industry. OPC plans to set up a tanker-allocation committee for the Gulf section, to develop the most efficient program for moving gasoline into areas where it is needed, but it has already become evident that even were it possible to move out all of the product needed everywhere stocks would continue to pile up as a by-product from the production of special products for military use.

Ickes Says Card Rationing Will Come About May 1

Fight on Change in Depletion Allowance Gaining

Amended Order P-98 Clarifies Equipment Ratings

☆ ☆ ☆ ☆

The depletion question became a live one during the week, in anticipation of hearings on the subject beginning March 23 before the House Ways and Means Committee, now studying the Treasury recommendations for a $7,000,000,000 tax bill.

☆ OPA ☆

Price Ceiling Placed On Eastern Gasoline

The restriction of gasoline deliveries to service stations early last week was followed on March 18 by an order of OPA, freezing the prices of gasoline in the affected areas to the levels of March 13, effective March 23 for a period of 60 days.

The order was issued under the authority of the Emergency Price Control Act, which provides severe penalties for willful violation of maximum price regulations, running as high as a fine of $5,000 or imprisonment for one year, or both.

Announcing the ceiling and a requirement that station operators post the maximum price for each grade of gasoline in letters at least five inches tall, Acting Administrator John E. Hamm disclosed that OPA is giving "serious consideration" to the advisability of licensing operators in the curtailment area to assure compliance with the maximum prices.

"In that event," Hamm said, "any seller of gasoline in the 'curtailment area' who violated the price ceiling would be warned first and then, if violation continued, would be subject to court action to have the license suspended. This, of course, would be in addition to any criminal penalties that might apply."

Conference Called on Higher Freight Costs

Marketers and shippers in District 1 have been invited to meet with officials of OPA March 23 for a discussion of the effects of rail freight increases upon the industry.

The meeting was called as a result of the increases instituted by the carriers under the recently granted approval of the Interstate Commerce Commission. OPA has been resisting increases in rates on oil, steel and certain other basic commodities.

At the conference, industry representatives will be asked to submit data as to what action they would take as a result of the six percent increase if there were no maximum price schedules in effect; what sort and degree of price changes typically resulted from changes in transportation rates when prices were unregulated; what products will be most seriously affected by the new rate increase, and what economic effects

would ensue from the increase, unless compensated by a change in price ceilings, and if such a change is granted how it shall be applied.

☆ ICKES ☆

Card Rationing Will Follow About May 1

Card rationing of gasoline consumers in District 1 and Oregon and Washington will come about May 1, it was indicated by Coordinator Ickes March 19.

The rationing system will be substituted for the present restrictions on deliveries "as soon as Henderson can get around to it," Ickes said, adding that while he could not predict the date "we hope it won't be too long delayed because this (restriction) is just a rough and ready way of rationing."

Ickes refused to support a statement by William R. Boyd, Jr., chairman of the Petroleum Industry War Council, that fullest cooperation by the industry with the limitation program is the only way to avoid rationing. Card rationing, the coordinator said, is a certainty. "I do not believe we can ration effectively without a card system," he said.

Rationing will come first in the curtailment areas, but may later be extended to other sections if need arises. Right now, Ickes said, rationing would not be justified in areas where there is plenty of gasoline and plenty of transportation. However, he commented, nationwide rationing might be desirable to save tires, but no such suggestion has been made officially.

New England will have to bear the heaviest burden of rationing, the coordinator disclosed. Meeting with fuel commissioners of the New England states March 17, Ickes learned that the situation there, as regards both oil and coal, is critical and getting worse.

Application of the order requiring oil consumers who can do so to resort to the use of coal, he said, may raise a problem with respect to supply of that fuel in the six northeastern states. The transportation of both types of fuel to that area next winter may present a problem which can be met only by sharp rationing of heating oils.

The Eastern supply situation continues to deteriorate, the coordinator said, disclosing that on March 14 stocks of heavy fuel oil were 684,000 barrels under those of March 7, that inventories of all oils declined 1,501,000 barrels during the week and that the total stocks were 12,326,000 barrels under those of March 15, 1941.

This decline in stocks, Ickes showed, occurred in the face of a new high record rail movement in the Atlantic Seaboard of 439,200 barrels a day. During the week ended March 14 a total of 13,664 cars were moved, equivalent to 3,074,400 barrels, against 13,536 cars, or 3,045,600 barrels in the preceding week.

Ickes said that the goal of 10,000 additional cars to be secured from the middle west has been reached and OPC now is after more.

Gasoline Restrictions Bring Hot Protests

Restrictions on deliveries of gasoline and heating oils in District 1 and Oregon and Washington, announced early last week, met with a mixed reception in the affected parts of the country.

Protests against curtailment of gasoline supplies were immediately registered by the Governor of Florida, fearful of the effect on the state's tourist business, and by Representative Aime J. Forand of Rhode Island, who proposed to Coordinator Ickes that rail and ship transportation facilities be allocated on the basis of consumption.

Senator Capper of Kansas also criticised the order declaring that "it is high time for the Administration to give some consideration to the problem of having some industries and businesses left on which to levy taxes for the hundred and more billions of dollars needed for the war effort." The oil and automotive industries, he pointed out, have been prolific sources of tax revenues for the federal, state and local governments; the former has been eliminated and the latter soon will be lost if the present policy is followed.

"It is my understanding that the present shortage of gasoline and fuel oil along the Atlantic seaboard is really due to a shortage of water transportation," Capper told the Senate, "but I understand also that if the entire refining capacities of the Mid-Continent area were to be utilized, sufficient gasoline and fuel oil could be shipped in tank cars and through existing pipe-line facilities — with a comparatively few additional connections — to make up much of the Atlantic seaboard shortage."

Fears Kansas Reduction

In a letter to Ickes asking the coordinator "what program you have in mind for the oil industry, what is the objective of that program, and why it is not inconsistent to reduce production and discourage new production in the face of these serious shortage forecasts," Capper revealed that his main concern was the threat to reduce Kansas production by 40 percent.

Adopting a policy of "cards on the table," OPC issued a lengthy explanation of the developments necessitating gasoline rationing, pointing out that total inventories in the Eastern States are more than 12,000,000 barrels below those of a year ago and warning that the rail movement of 435,000 barrels a day is only about one fourth of the daily demand. Use of railroads, it was said, is costing the companies $115,000,000 a year in additional shipping costs.

"OPC has been desirous of avoiding curtailment of gasoline consumption as long as possible," Ickes said. "If circumstances permitted, we should like — just as the industry would — to make it possible for everyone to have full tanks at all times."

☆ TAXES ☆

Depletion Matter Up Before House Group

Abandonment of many properties will result if the depletion allowance is reduced or eliminated, as proposed by the Treasury Department in its tax recommendations, it was warned this week in a brief filed with the House Ways and Means Committee by the Bradford District Oil Association. The question of depletion will be taken up by the House Ways and Means Committee, now holding hearings on the 1942 tax bill. March 23 and 24.

The association pointed out that in 1926, after lengthy investiga-

tion, Congress, in an effort to give some uniformity to the depletion allowance, fixed a figure of 27½ percent, which was less than had been taken and allowed under previous revenue acts.

"The Congress said it was fair, and has continued to say so far 16 years," the brief declared. "No condition or emergency, however great or threatening, can logically convert the conclusion of its fairness. If this percentage was determined to be fair and acceptable in the Revenue Act of 1926, maintained in 1928, 1930, and 1932, and so on down to date, it must be held that Congress so construes it. To take any part of the allowable and tax it as income would be discriminating, inequitable, and manifestly unfair.

"Depletion is not income, but by lessening the amount allowed, the difference is made income for taxing purposes. An oil producer cannot replace the oil he pumps out of his property. Depletion alone is his return of investment, and depletion alone is his compensation for nonrecovered oil. Depletion and depreciation represent the living wage to many of our producers."

U. S. Chamber Takes Up Fight

The United States Chamber of Commerce also will oppose a change in the depletion allowance on the ground that it will affect the war effort.

In a report prepared by W. DuB. Brookings, head of the natural resources department of the chamber, it was pointed out that Deputy Coordinator Davies, testifying before the Cole Committee last month, admitted that under Conservation Order M-68 the drilling program for the year will be reduced at least 40 percent below the 1941 level.

"If percentage depletion, which allows the developer of a well to obtain the in-place value of the petroleum produced from a well, is not given enough incentive to promote more new discoveries than the deputy coordinator reported, it is obvious that a change in the law that would decrease percentage depletion, or abolish it, would further lessen development of new oil resources at a time when expansion of them is essential for national defense," it was declared. "The realities of the country's needs in war urgently point to the timeliness of increasing incentive for exploratory oil wells, not to any decrease in incentive.

Oklahoma Senator Speaks

In the Senate on March 19 Senator Josh Lee of Oklahoma also attacked the Treasury's proposals, declaring it is doubtful if the Treasury actually loses any revenue because of the depletion allowance, because it receives revenue more on an installment basis rather than all at one time.

"To change this policy," he asserted, "would eventually destroy the small companies and thus kill the goose that lays the golden egg.

"I cannot warn too strongly against the danger to our supply of petroleum if we change our proven policy," he declared. "Bear in mind I am not asking a change in our laws. I am resisting change. It would be a shortsighted policy to abandon a proven program for an immediate increase in revenue which would undoubtedly result in a long-time decrease in revenue, and at the same time threaten our supply of petroleum at this critical hour."

Efforts of the Senate to provide free insurance of oil and other civilian properties against enemy damage failed this week when Congress adopted a conference-committee agreement accepting the House plan to place such protection on a premium basis.

The premium rates for such insurance, however, will range only from 10 to 20 cents per $100, under schedules now being considered by Secretary of Commerce Jesse Jones.

As finally agreed upon, the measure authorizes the War Damage Corporation to insure real and personal property in the United States and in all American territory against loss or damage occasioned by enemy attack, as well as loss occasioned by resistance of American military forces to such attack.

It is provided that the insurance may be written directly by the corporation or written by insurance companies and reinsured by the government, but the premiums to be charged are to be uniform for each type of property insured. Negotiations are now under way between the corporation and the industry to work out a plan for handling the writing of policies.

The insurance plan is to be perfected on a date to be fixed by the Secretary but not later than July 1, next, and in the meantime free insurance against enemy-occasioned damage is to be provided. The War Damage Corporation will have a capital of $1,000,000,000 with which to cover the insurance.

Tires and Tubes for Oilfield Trucks

The War Production Board on March 20 modified its truck production restrictions so as to make available tires and tubes for heavy off-the-highway vehicles especially designed to transport materials and equipment on petroleum development projects.

Manufacturers of such equipment were advised by telegraph by J. S. Knowlson, director of industry operations, that vehicles weighing 24,000 pounds or more and produced under March production quotas may be equipped with tires and tubes if they are designed for use on such projects.

☆ OPC ☆

OPC Conference With State Bodies Soon

The long-planned conference of state regulatory bodies with OPC officials has been delayed to enable the state authorities to gather information requested by the coordinator's office, it was disclosed March 19 by Deputy Coordinator Davies.

Davies said the data sought would deal with reserves, production capacities, local conditions in relation to production and other phases of the situation which will be discussed at the meeting.

It has not been possible to fix a definite date for the conference, but it is expected it will be held within the next few weeks.

CIO Wants OPC Representation

Demand of CIO that it be given representation before OPC in relation to labor matters will be met only if the organization can show that it represents the workers in the oil industry, it was declared by Coordinator Ickes March 19.

Asserting that he never has had any objection to labor representation, Ickes said it was a matter of how to select representatives and the scope of representation.

"The situation in the petroleum industry," he explained, "is different from that in other industries, such as coal. Only 25 percent of the workers in the oil fields are organized and they are divided between the CIO and AFL. What seems important is how labor can be represented. Who speaks for labor in the oil fields."

OPC Forbids Additives In Civilian Lubes

Use of cresol, metallic detergents and chlorine in lubricants for passenger and other light cars was prohibited March 19 in a formal OPC recommendation (No. 40) designed to conserve chemicals necessary for the production of high-grade lubricants needed for military use and war industries.

The OPC recommendation was issued following announcement by WPB that the supply of chemicals used in additives has declined seriously.

In addition to forbidding the use of the three ingredients named, the recommendation prohibits use of extreme-pressure lubricants in the transmissions of passenger and other light cars and suggests its elimination, where possible, in transmissions of heavy-duty equipment, and calls for reduced use of oxidation-inhibitors and pour-point depressants.

No changes are recommended for lubricants used in heavy-duty equipment, police cars and motorcycles, ambulances, buses, or cars in official use by the armed forces. Lubricants for these machines is to be marked "not for use in passenger cars" and marketers will be expected to comply with the sales instructions on the containers.

All manufacturers of lubricating oils and greases have been requested to report to OPC on the results of the conservation order within 45 days.

Personnel Addition To Control Agencies

Appointment of James E. Hughes, formerly special agent for the Department of Commerce, as head priority specialist in OPC, was announced during the week by C. H. Matthiessen, Jr., chief of the Bureau of Priorities of the War Production Board.

The appointment was one of a number made in setting up the executive staff of the bureau, which includes a full staff of priority specialists for assignment to all of the industry branches in WPB.

Opening of a materials division in the District 4 office at Denver, under the management of John B. Schuyler, has been announced by OPC.

Reese H. Taylor, president of Union Oil Company of California, has been named a regional industrial consultant on the staff of Clarence Francis, chief industrial consultant to the Defense Plant Corporation, to assist in expediting construction of plants.

Taylor will have as his assistants, Arthur C. Stewart, also of Union Oil Company of California, and Clifford W. Lord, Oil Well Supply Company, Los Angeles.

Consultant for the Texas area will be Tilford Jones, Houston engineer.

Joel Dean, industrial engineer and assistant professor at the School of Business of the University of Chicago and for the past nine months price executive of the machinery section of OPA, has been apointed chief of gasoline rationing in the newly created OPA rationing division. In his new position, Dean will handle the problems of gasoline rationing by card, expected to be imposed in the near future.

☆ WPB ☆

Amended P-98 Classifies and Clarifies Equipment Ratings

A two-months' trial of a new preference rating scheme for the oil industry is provided for in the amended Preference Rating Order P-98 issued by the War Production Board under date of March 14.

Complete Text of Amended Order P-98 Begins on Page 36

Embodying the recommendations of OPC, the order provides a new set-up for preference ratings by classes instead of activities, but does not substantially change the ratings for specified purposes.

Priorities, however, have been extended to take in office supplies and automotive equipment, given a rating of A-10. Automotive equipment is defined as specialized material for containing, measuring or dispensing petroleum, but does not include automobiles, trucks, tires or chassis.

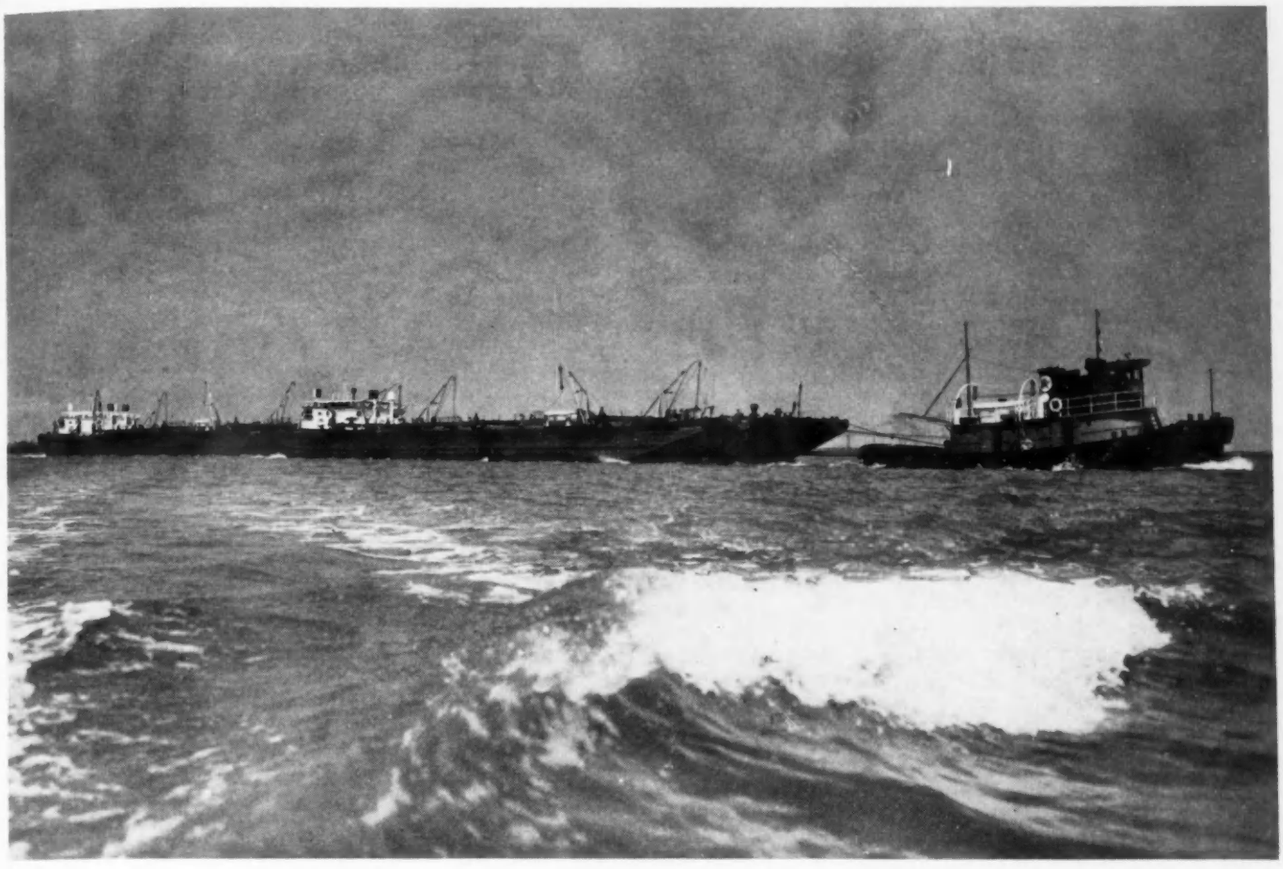
Where automotive equipment, other than automobiles, trucks, motors, parts thereof, tires or chassis, is required by an operator for search and discovery by means of geological, geophysical or geochemical prospecting, it is given an A-1-e rating.

Top rating of A-1-a is given to material for natural-gasoline extraction, field-pressure maintenance, repressuring, cycling, dehydration and desulphurization plants and refineries, for repairs in the case of actual breakdowns or suspension of operation. An A-1-c rating is given for such plants where necessary to avert an actual breakdown or suspension of operation, while an A-1-e rating is given for materials for discovery.

A-2 ratings are provided for materials for laboratory investigations into more efficient or more effective methods of production or refining; for exploratory drilling; refining; natural gas and similar plants, and transportation.

Maintenance or repair of production, refining or transportation fa-

[*Continued on page 36*]



Barges Offer Partial Solution to East Coast Oil Shortage

By L. J. LOGAN, Associate Editor

MIRACLES have been performed in moving oils to the East Coast by railway tank car. But tank cars cannot be the whole answer to the nation's oil transportation problem, which may become more serious before it gets lighter.

Nor is it conceivable that pipe lines can be made to end the trouble, under present conditions of steel scarcity.

Consequently, it appears that more will have to be accomplished than heretofore through another line of action: Expansion of the movement of oils by canal and river barges from the Gulf Coast to Pennsylvania and West Virginia.

Although increased materially because of the Eastern situation, oil shipments up the Mississippi will be further enlarged through measures now being taken.

However, present tug and barge equipment will not permit any great increase of movement; and more barges and probably more towboats would be required.

While the scarcity of steel, pumps, and engines stands in the way of providing more floating equipment, it is suggested that barges and tugs might be made largely or wholly of wood, despite disadvantages of such construction.

Furthermore, it is stated that any steel put into barges would constitute the most efficient possible use of that material in providing inland transportation of oil.

INCREASED seriousness of the oil shortage in the East Coast district has forced re-investigation of the possibilities for alleviating the situation in that region; and one of the important answers may be a further expansion of the use of river and canal barges in moving crude oil and petroleum products, although there has been already a substantial increase in such movement.

The possibilities for further enlarging barge shipments up the rivers to the East lie in two major fields: (1) gaining greater efficiency from existing facilities, and (2) increasing and improving facilities, through construction of more tugs and barges and additional work on the canal systems, although such enlargement of facilities would be handicapped by scarcity of materials.

Transportation committees set

up by the oil industry under OPC lately have pointed out and brought about action on means for increasing the efficiency of barge movements of oil, and in consequence, there is expected to be henceforth some stepping up of shipments from the Texas and Louisiana Gulf Coast areas up the Mississippi River system. Improved scheduling is an important objective, and elimination of uneconomic or wasteful hauls is another. Heretofore, there has been some barging of oils from east to west in the Gulf Coast area, and such movements are to be minimized or eliminated. Similarly, movement of oils from the Corpus Christi area into the producing and refining districts toward the east will be avoided, as the most efficient marketing outlet from the Corpus Christi area is direct loading of ocean going tankers destined for the Atlantic coast.

(The Intracoastal canal extends as far west as Corpus Christi but shipments between Galveston are held up pending construction of locks at the Colorado and Brazos rivers. If those locks were provided and adequate barges were available, oils from the Corpus Christi area could feed into the inland waterway system and go as far as Pittsburgh.)

Transportation committees of District 1 (East Coast) and District 3 (Southwestern States) have cooperated with that for District 2 (Middle West), and one of the measures contemplated for relieving the East Coast shortage is the use of pipe lines to their utmost capacity in supplying Minneapolis, St. Paul, Chicago, and other Mid-Western areas in order to release barges that have served those districts for use on the Ohio River. It was reported that in accordance with the plans, a group of large independent marketers of the Middle West immediately undertook arrangements for transporting over a million barrels of gasoline and light products by pipe line from Mid-Continent refineries.

An important need in connection with the operation of barges, it is said, is a practical plan for extension of the interchange of barges between carriers.

Expansion of Facilities

The foremost problem involved in expanding facilities for movement of oils by barge is the scarcity of steel. Some wooden barges are used in handling crude oil and heavy fuel oil, but they are rare, and steel barges are commonly employed and preferable. To obtain steel for barge construction under the priority regulations probably would require a year, the A-2 rating applying. However, the steel might be obtained more promptly through application for allocations for specific jobs.

In view of the difficulties and uncertainties of obtaining steel, it has been suggested that construction of new oil barges largely of wood should be undertaken. That all-wood barges for oil could be used is attested by the fact some such boats are employed. However, they are mostly old barges put back into service only because of the emergency and the scarcity of steel barges; and it is indicated that any construction of new wooden barges would be inadvisable unless improvements were embodied in the construction. The old wooden barges continually leaked, according to barge operators; tended to capsize; and were deficient in strength. They were condemned by the government, and certificates for their operation were revoked; although they lately have been released for further service. Some barge operators feel that even improvements in construction would not make the wood barges practical for handling crude or fuel oil, much less the lighter petroleum products. It would be difficult to build them above 5000 barrels capacity, it is stated, whereas it is highly desirable to provide at least about 9000 barrels of capacity, as in the familiar-size barge, 195 by 35 by 11 feet, which requires about 7 hours to load, using two pumps. The additional suggestion has been made that if considered necessary, the barges might be lined with sheet steel, to prevent leaks and to permit cleaning of the barges for handling different kinds of crudes or other oils. Sheet steel is less scarce than some other steel products and would be required in comparatively moderate quantities. However, some of the sheet rolling mills are being converted to the making of steel plate, and there is no assurance that sheet would be long available. Moreover, it might prove difficult to line the barges with sheet steel satisfactorily, as there would be danger of tearing of the metal and separation of the welded seams, with resultant leakage of oil, which would be a serious fire hazard. Such leaks would be likely, in the opinion of some men in the marine departments of oil companies, because of the weaving motion of the barges, due to water currents, and because of knocks, bumps, and collisions. To avoid leaks, linings would have to be practically as thick as ordinary steel barges in order to permit sufficiently heavy welds, some oil company men believe. However, it is possible that a system of internal bracing might be worked out to offset the strains to which the steel lining would be subjected. Another problem would be the fire hazard involved in welding the seams of sheet steel in proximity to the wooden hulls of the barges. A marine engineer pointed out also that the danger of fire from leaky oil barges is increased by the fact that friction between the wooden barge sides and such objects as concrete piles and wharves has been known to cause the wood to smoulder. One company discarded wood fenders because of this hazard and went to using old tires, but now will have to use rope fenders.

Despite the above mentioned obstacles and disadvantages, however, new barges of wood are not ruled out as feasible. The barges doubtless could be reinforced and made stronger than they formerly were, and special efforts could be put forth to make them sufficiently tight, with or without steel lining, to handle crude and fuel oils without leakage.

The question arises, in connection with the building of new barges, whether or not any considerable number of towboats would be available for handling them. Apparently, some existing towboats could be obtained, as the government has encouraged their construction. But the supply is reported scarce, and it is indicated that any substantial program of barge building would have to be accompanied by construction of canal and river tugs. Towboats, as well as barges, could be built of wood, but equipping them with diesel engines and other machinery would be a difficult problem under present conditions.

Barges made of concrete and reinforced with steel have been proposed for coastwise movement of oil, but they would be heavy, with 15 or 20 feet of draft, and they have not been considered for canal and river use. Even for ocean service they have not been seriously considered, as they would require comparatively large tonnage of steel.

On the existing inland waterway

system, oils currently are moving all the way from the Houston-Galveston area northeast to Pittsburgh and north to Minneapolis, while it is possible to reach Chicago in shallow-draft barges and from there continue shipments through the Great Lakes and on via Buffalo through the Erie Canal to Albany and New York. On the Intracoastal Canal of the Gulf Coast, a 9-foot channel is available, and comparatively large barges are being moved all the way to the Pittsburgh area, in alleviating the East Coast oil shortage. Even in normal times heavy use is made of the Intracoastal Canal between Houston and Baton Rouge, as that system and a network of canals provide many Louisiana Gulf Coast oil fields their only market outlets, barges being much more practical than pipe lines in that marshy country.

In current investigation of the possibilities of alleviating the East Coast shortage by barge shipments, it has been suggested that the oils so moved might be delivered farther east not only in railroad tank cars but also through pipe lines to be constructed between Pittsburgh and Philadelphia with pipe dug up in some of the numerous lines between East Texas and the Gulf Coast. Digging up of such lines has been suggested as an emergency measure that would be justifiable in view of the reduced demands now imposed on those lines, due to oils moving northward out of East Texas, instead of to tidewater.

Economical Transportation

Just as ocean-going tankers afford the cheapest established method of transporting oil, barges on the inland waterways probably could be made to furnish the cheapest possible transportation within the interior of the country, as well as the sheltered movement that is desirable in war time.

Even heretofore, when no large-scale barging of oils across the country has been attempted, it has been found that barge transportation was as cheap as pipe-line transportation, if not cheaper. As in the mentioned instance of South Louisiana, barges are, in fact, clearly superior in some cases. Consequently, barging of oils up the Mississippi and Ohio rivers ranks as an economical alternative to the proposal of building a pipe line from the Southwest to the East, a proposal twice turned down by the government because of the lack of steel.

It is stated that even all-steel barges offer a distinct advantage over any other form of cross-country transportation from the standpoint of savings in steel; that a given daily movement of oil between two cities on the inland waterway system can be provided through barges with possibly one third as much steel as would be required in a pipe line.

If all-wood or steel-lined wood barges could be made satisfactorily, the advantage of greater use of barges would be even more pronounced from the viewpoint of savings in steel.

The fact that barges do not have a clear economic advantage over pipe lines in areas which could be served by either is due to the higher operating expenses of the barges. The pipe line has low operating and maintenance expense but high capital investment, in reflection of the mentioned greater use of steel and other physical facilities. The barge system, conversely, has comparatively large operating and maintenance expense but relatively small capital investment, in reflection of economical use of steel and other physical facilities. The pipe line is an oil container that must extend from point of origin to point of delivery, but the barge is an oil container that is moved between the points.

Inasmuch as ocean-going tankers normally can move oil between two water points for one half or less than half the cost of transportation by pipe line, it is only logical that inland waterway transportation similarly should be competitive with if not cheaper than pipe-line transportation.

Currently, rates charged for moving oils on the canals and rivers vary, being determined by bargaining, with oil companies commonly contracting with barge-line operators either direct or through brokers. Comparatively good rates now are available to the barge lines, naturally, because of the general scarcity of transportation facilities. However, if more barges and towboats were available, and if large-scale movements were involved, rates doubtless could be materially reduced by the barge lines.

Movements of oils by barge from

the Gulf Coast to Pittsburgh are more expensive than combined pipe line rates between those points, with the difference accentuated by recent further reductions in pipe-line tariffs. Combined pipe-line rates on crude oil between the Gulf Coast and Pittsburgh, via Oklahoma, amount to 66 cents a barrel (20 cents between Oklahoma and the Gulf and 46 cents from Oklahoma to Pittsburgh). Combined charges by barge lines between Houston and Pittsburgh currently amount to 96 cents a barrel or more (16 to 20 cents from Houston to Baton Rouge and 80 to 90 cents from Baton Rouge to Pittsburgh). Some contracts now involve a rate of 4 mills per long ton mile, and it is over 2000 miles by canal and river from Houston to Pittsburgh.

While the present barge rates are somewhat higher than pipe-line tariffs, they are considerably less than even the reduced, emergency rates on railroad tank car shipments from the Southwest to the East Coast district. Rail rates from Houston to the New York City area are $1.52 a barrel on crude oil and $1.75 on gasoline.

To the barge charges of about 96 cents a barrel from Houston to Pittsburgh would be added, of course, further moderate costs for rail shipping on to the East Coast district points supplied.

It has been suggested, however, that if material barge movement to Pittsburgh could be built up, it would be logical to build pipe lines from there to the Philadelphia area, using reclaimed lines from Texas and other Southwestern states. Pipe line rates on such movements from Pittsburgh to Philadelphia probably would be only about 10 cents a barrel; and thus the total barge-pipe-line tariff from Houston to Philadelphia would be $1.06, on the basis of present barge rates, which probably could be substantially reduced. A saving of at least 50 percent apparently could be made, therefore, on the combination long barge and short pipe-line shipments as compared with all-pipe-line movement.

In supplying the East Coast from the Gulf Coast, inland waterway barges normally would never be competitive with ocean-going tankers, as the latter have the advantage of greater carrying capacity per load, higher speed, more rapid loading and unloading, and direct access to the largest consuming centers. As compared with the barge, pipe-line, and rail rates given above, the rates for shipments by tanker from Gulf ports to Bayonne, New Jersey, a distance of 2000 miles, averaged only 30 cents a barrel in the five years, 1936-1940. At present the tanker rates from the Gulf Coast to Atlantic Coast points north of Hatteras, as pegged by the Maritime Commission, range from 40 to 48 cents a barrel for petroleum products, depending on the material shipped, with authority given for additional graduated extra charges on boats with speed above 10 knots. To the established tanker rates must be added, however, high war-risk insurance, which heretofore has amounted to about 30 cents a barrel, but which lately was scheduled to be approximately doubled, following the wave of East Coast tanker sinkings.

Under the present conditions, therefore, barge rates are competitive even with tanker rates.

Even under normal conditions, barge transportation is competitive with or cheaper than tanker transportation for some of the shorter hauls, as between Gulf Coast points. And it is considered probable that barges eventually may virtually replace tankers for intracoastal movement.

At least a month is required for a tow of barges to deliver a cargo from Houston to Pittsburgh and return, and probably a better estimate is 3 weeks for the trip up the rivers and 2 weeks for the return. A round trip from Houston to Baton Rouge requires approximately a week.

On the Intracoastal Canal, the barges commonly are pushed or pulled at the rate of 2 to 5 miles an hour. On the rivers, they move 2 to 4 miles per hour upstream and may make around 10 miles an hour going downstream. However, for going against the current in the Mississippi, ample power is needed. Towboats that handle two barges in the Intracoastal canal sometimes have difficulty in the big river even upon resorting to single handling of the barges. Towboats without adequate power will be outpushed by the current.

In the Intracoastal canal, barges are handled singly or in tows of 2 or 3, regulations on length of tows being necessary because of the danger of going aground against the banks at turns or under the force of cross winds and because of danger of collision in meeting other tows. In the Mississippi, there is more width and depth of channel, and larger towboats are used, the handling of 6 barges of 8500 or 9000 barrels capacity in a single tow being common. Such a movement involves over 50,000 barrels of oil, equivalent to the capacity of a small tanker, although the rate of travel is slower. In an instance reported some months ago, there was made the largest barge haul of gasoline in the history of the lower Mississippi, in which 3,000,000 gallons (about 71,000 barrels) moved up the Mississippi and Ohio rivers to Pittsburgh in 6 barges of approximately 12,000 barrels capacity each, propelled by one large river towboat. It was expected that the trip up the rivers would require about 21 days. That tow handled as much oil as a large tanker. The cargo was equivalent to the oil that could be hauled in 5 railroad trains of 60 tank cars each.

It was estimated by the industry's fact-finding committee, in connection with the first efforts to alleviate the East Coast supply situation, that 18 barges of 8500 barrels capacity each and 3 towboats would be required to transport oils from the Gulf Coast to West Virginia and Pennsylvania points in volume equivalent to the capacity of one ocean-going tanker. In the same report it was stated that the three largest barge builders on the Mississippi River system could turn out 7 barges per month if steel could be secured; and those yards at that time—May, 1941—had 22 oil barges building, while 10 more were being built by other companies. Many of those were, however, small barges. Subsequently, in response to the deficiency of transportation to the East, oil barge construction sharply increased, and on November 1, 1941, 32 oil barges were under construction in the whole country.

If any planned and substantial increase of inland-waterway shipment of oil were undertaken, much could be accomplished toward raising the efficiency of such movements, particularly by development of improved barges and towboats. An example of better floating equipment was afforded last fall when a new tanker-type vessel was put into service on the Mississippi. It was 235 feet long, with beam of 35 feet, and draft of 14 feet. Powered by two 350-horsepower diesel engines, it could travel 9 miles per hour, carrying 9000 barrels of oil itself and pushing another barge, while also providing deck space for general cargo.

[*Continued on page 47*]

Value of Planned and Controlled Operations Demonstrated by Successful

Shallow Water Flood

By GILBERT M. WILSON,
Staff Writer

THE feasibility of successfully water flooding many shallow, semi-depleted oil fields in certain areas of West Central Texas definitely has been proven in at least one project that was started in the early part of 1941. A group of 14 wells, producing from a sand at 350 feet, whose total lease production had slumped to only 4 barrels per day, and to which were later added 14 more wells (12 of which are redrilled, formerly abandoned wells) on adjoining leases, have responded to water flooding to the extent that the 28 oil wells are now producing a total of 4000 barrels per month, with the rate still on the increase, after only 11 months of active flooding operations.

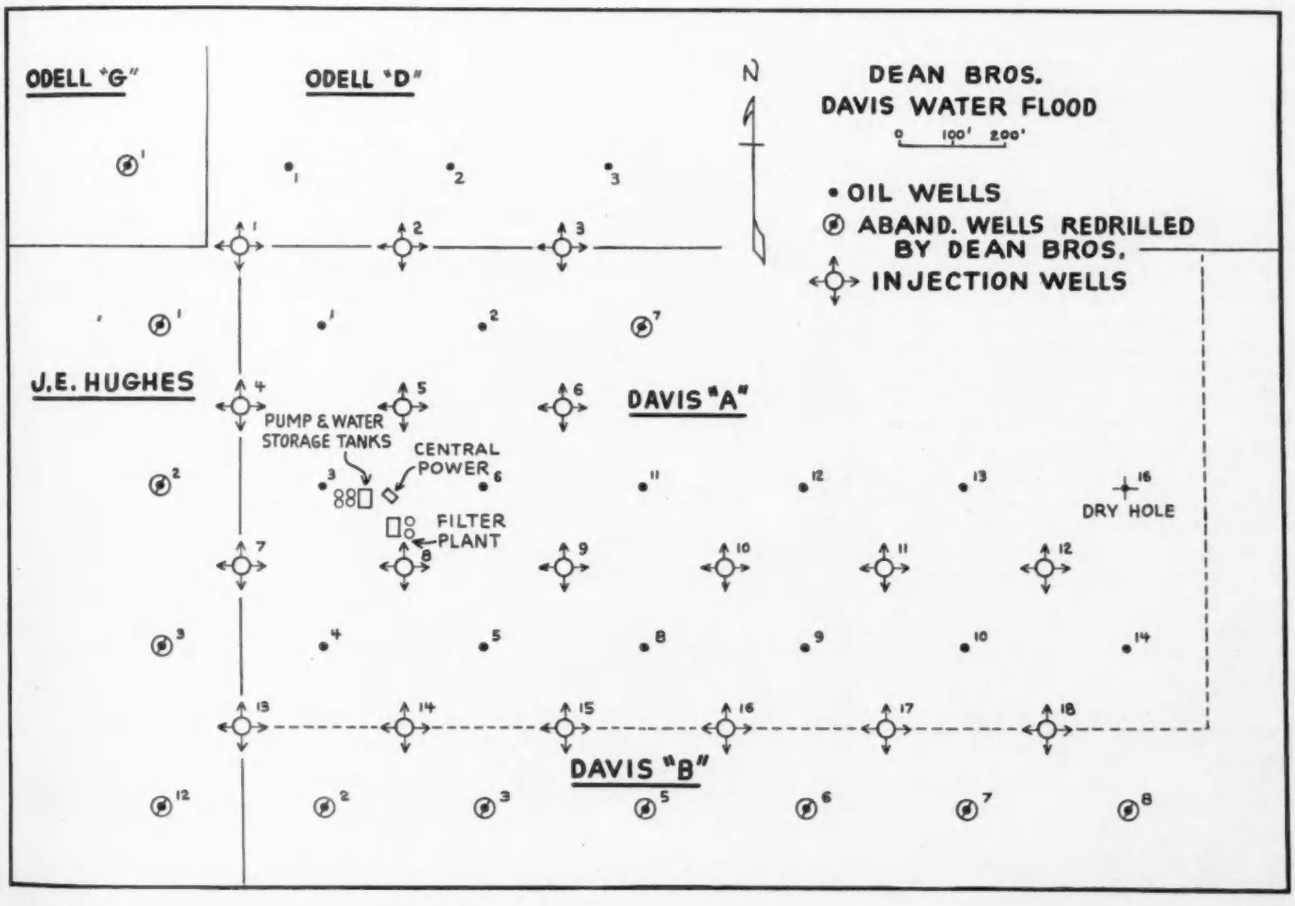
The area being flooded is a 40-acre tract located near the center of the old Woodson field, three miles southwest of the town of Woodson in Throckmorton County. In view of the apparent initial success of the present flood, plans are now under way for the flooding of at least two adjoining 40-acre tracts in the same field, one on either side of the present project.

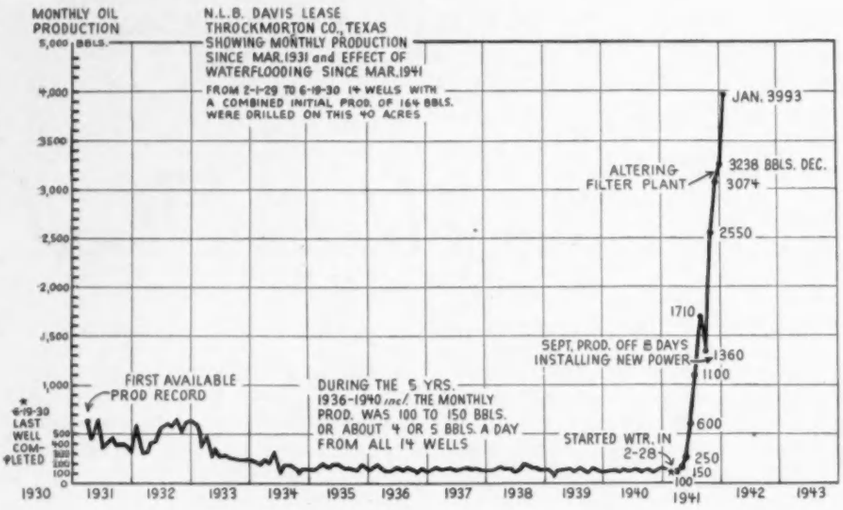
In addition to the current operations in the Woodson field, the operators, Dean Brothers, geologists of Fort Worth, recently have taken over stripper-well properties in several other nearby West Central Texas shallow fields whose conditions appear favorable for similar flooding operations. Engineering and supervision of flooding operations is under the direct supervision of K. B. Nowels, petroleum engineer who has had considerable practical experience in water flooding in Pennsylvania.

Oil sands in this field (Upper Tannehill sand) average from 15 to 17 feet in thickness, and gravity of the oil ranges between 38 and 40 degrees API.

Several conditions, operating as well as economic, in this field, appear to lend themselves ideally to secondary recovery by water flooding methods.

First, is the shallow depth of the oil sand, being only 350 feet, and which has no water sand overlying it, making it unnecessary to case





the injection wells or any oil wells that may be drilled on the property in the future.

Second is the uniformity and extremely high permeability of the oil sand. Permeability ranges from 350 to 500 millidarcies. This compares with 75 for the Bartlesville sand of Oklahoma and Kansas, and from 6 to 20 for the sands of the Bradford, Pennsylvania, region. Sand porosity averages 25 percent. So far as is known, this sand is the highest average permeability of any so far attempted for water flooding.

Still another factor favorable to water flooding is the close proximity of an ample supply of fresh water, the source being a lake several miles north of the field.

It is estimated that prior to the start of water flooding, the Woodson field had produced approximately 3000 barrels of oil per acre. From cores taken of the sand during subsequent drilling of oil and water-injection wells on the Davis lease (now under flood) the operators estimated that 400 to 500 barrels per acre-foot, or from 6000 to 8000 barrels per acre, total, of residual oil still remain in the sand.

While it is not yet safe to try to predict what percentage of this residual oil ultimately may be recovered through the flooding operations, some rough idea of the ultimate recovery to be expected may be gained by referring to records of certain already flooded and abandoned operations in other United States fields.

In Bartlesville sand water flooding projects, 50 percent of the calculated remaining residual oil content of the sand seems to represent an average of the ultimate recovery from beginning to end of the flood life. In the Bradford sands, around 40 percent of the total may be extracted before being forced to abandon the wells permanently.

An ultimate recovery at least equal to the above figures is anticipated by Dean Brothers for this present project, and it is hoped, but not counted on, that it will be greater, because of the considerably greater permeability and the good porosity of this sand. Because of these favorable sand conditions, it is easier for oil and connate or "fossil" water to be dislodged from the sand pore spaces by the flushing action of the invading water flood. This contention was borne out in the early life of the present flood by finding, through salinity tests of some of the water produced with the oil, that some of it was connate.

Every step of the planning and working out of the various details both prior to and following the beginning of water injection, the latter part of February, 1941, was carried out thoroughly, and with the aid and benefit of all possible information gleaned from records and experience of similar projects successfully carried out in other fields, particularly Pennsylvania.

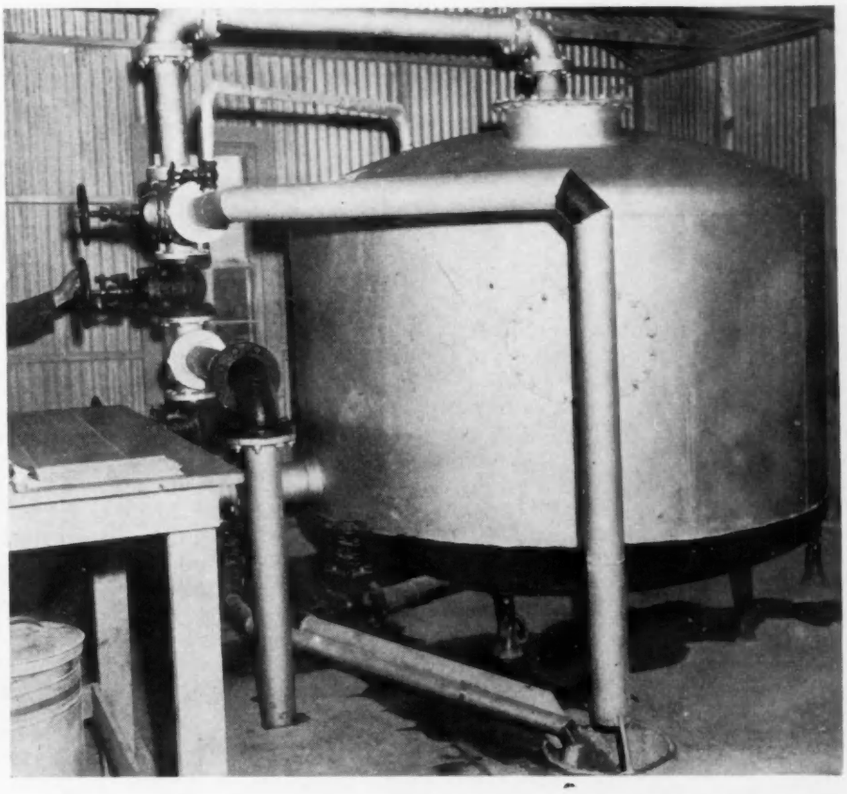
New Injection Wells Drilled

Contrary to the practice sometimes resorted to in other fields of using some of the existing wells for injection purposes, and which often cause such projects to fail, new holes were drilled for injection purposes. The reason for this was at least two-fold. First, by drilling new wells, fresh, clean exposures of the sand face were assured, which would from the start provide a minimum of restriction to the entry of water into the formation. Old oil wells converted into water-injection wells, at least in shallow fields, prove to be more costly in converting them over, and in the subsequent extra maintenance work of keeping the sand face open, than it would have been to have drilled new wells in the first place.

Due to the restriction of the already partially-clogged sand some distance away from the bore of old holes, caused by accumulations of

The single, 3- by 10-inch vertical triplex pump is direct connected to a 25-horsepower single-cylinder engine. Pressure of 320 pounds is held constant by a back-pressure regulator in discharge.

Water is settled in this 500-barrel tank after first being treated. Chemical feeder house is atop the tank. From the settling tank water next goes into the filter tank in the adjacent building.



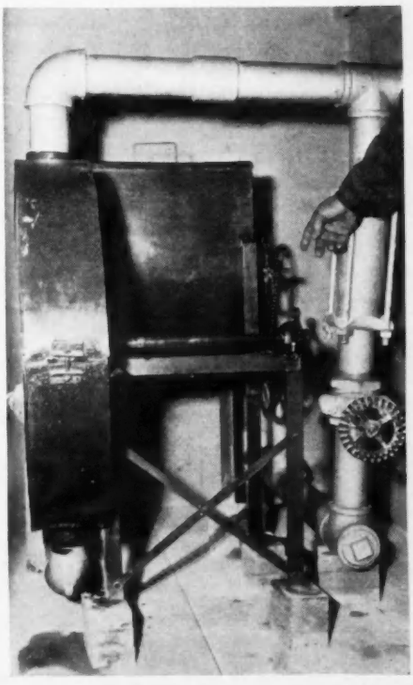
Interior of filter plant showing 3000-barrel per day capacity filter tank.

material deposited there during the producing life of the well, it results in the "starving" of some areas surrounding the tight wells. Injection pressures then would have to be maintained at higher values, which would increase the costs of pumping and other surface equipment maintenance.

A second important reason encouraging the drilling of new injection wells was that it permitted the taking of new cores of the sand so an accurate test and record could be made of all the sand characteristics without which it would be impossible to obtain dependable data for calculating the possible ultimate recovery, and in determining the best means of approaching the many aspects of the flooding problem.

Injection Wells Drilled Inexpensively

Original oil wells as well as the 14 new or redrilled ones on this property were spaced 300 feet apart, or one to every 2.07 acres. Each of the 18 injection wells drilled in this initial tract was "five-spotted," or placed in the center of each square, giving the water wells the same spacing frequency in the field as the oil wells.



The chemical feeder is actuated by the incoming water. A mixture of dry alum and lime fed in with the lake water removes turbidity and acidity that might clog injection wells.

Because of the absence of any water sand between the surface and the oil sand, the drilling of the injection wells was a comparatively simple matter. Open hole was drilled with cable tools down through, and 10 feet below the oil sand. The extra 10 feet of depth provided a pocket to collect cavings and debris, thus prolonging the time when the well will require a clean-out job. Cores of every foot of the sand were taken.

The hole was uncased except for a joint of slotted liner that was set opposite the sand face. A 2-inch string of tubing with a formation packer 25 to 30 feet off bottom then was run in the hole, the packer being set at the top of the sand. The 2-inch tail piece between the packer and the bottom of the hole was perforated with a number of 4-inch torch-cut slots.

Following setting of packer, 10 sacks of cement were poured into the hole on top of the packer. To permit the salvaging of the tubing whenever the lease is permanently abandoned after the flooding operations are no longer effective, a right- and left-hand coupling was placed on the first joint above the packer. This will permit the tubing to be unscrewed at that point by rotating the string to the right, after which it may be pulled from the hole.

A typical injection well head consists only of a 2-inch tee screwed to the top of the tubing

string which comes up to only slightly below ground level. Water from the distribution system enters one side of the tee, and the top side of the tee is bushed down to accommodate a pressure gauge. No gauge is left on the well, as it takes only a few seconds to screw on a gauge and read the pressure whenever such a reading is necessary. The surface fittings of each injection well are protected by a covered wooden box set nearly flush with the ground level.

Because of the encouraging results obtained thus far, and because of the high permeability of the oil sand, Dean Brothers have decided to increase the spacing pattern to one injection well to every eight oil wells in the future expansion of the project, at least in the Woodson field.

While this may decrease the slope of the recovery-time curve, the ultimate recovery probably will be the same, but the initial investment particularly in new wells drilled, will be far less than is now represented in the existing set-up.

Eventually, the entire Woodson field, at present consisting of some 71 oil wells, will be brought under water flood. Existing plant facilities are being expanded at the present time to accommodate in the near future, two additional tracts of 40 acres each on either side of the Davis lease. Beyond that, additional centralized plants probably will be installed to flood other portions of the field.

Water used in the flooding is pumped out of the lake with a 1600-barrel-per-day capacity centrifugal pump, and carried through 18,000 feet of 3-inch line to the filter plant on the Davis lease.

In addition to settling out in a tall 500-barrel redwood tank, the water is treated with chemicals. This insures against any possible contamination of the sand face by foreign matter or precipitates which might ultimately clog the interstices of the sand, and bring on early or premature work-over jobs on those wells.

At the top of the settling tank is a small sheet iron enclosure which contains a chemical feeder that continuously portions out a mixture of alum and lime directly into the incoming stream of water. The alum removes turbidity, and causes a white floc to precipitate out, and collect, later to drop to the bottom of the settling tank, along with a greater part of the silt or other foreign material that may have come in with the water. The lime removes any acidity in the water. A mixture composed of 12 pounds of alum together with 18 pounds of lime is used each 24 hours. The chemical feeder is essentially a small water wheel which is turned by a small stream of water taken off from the main incoming stream. Action of the water wheel revolves a feed screw in the bottom of a hopper containing the dry chemical.

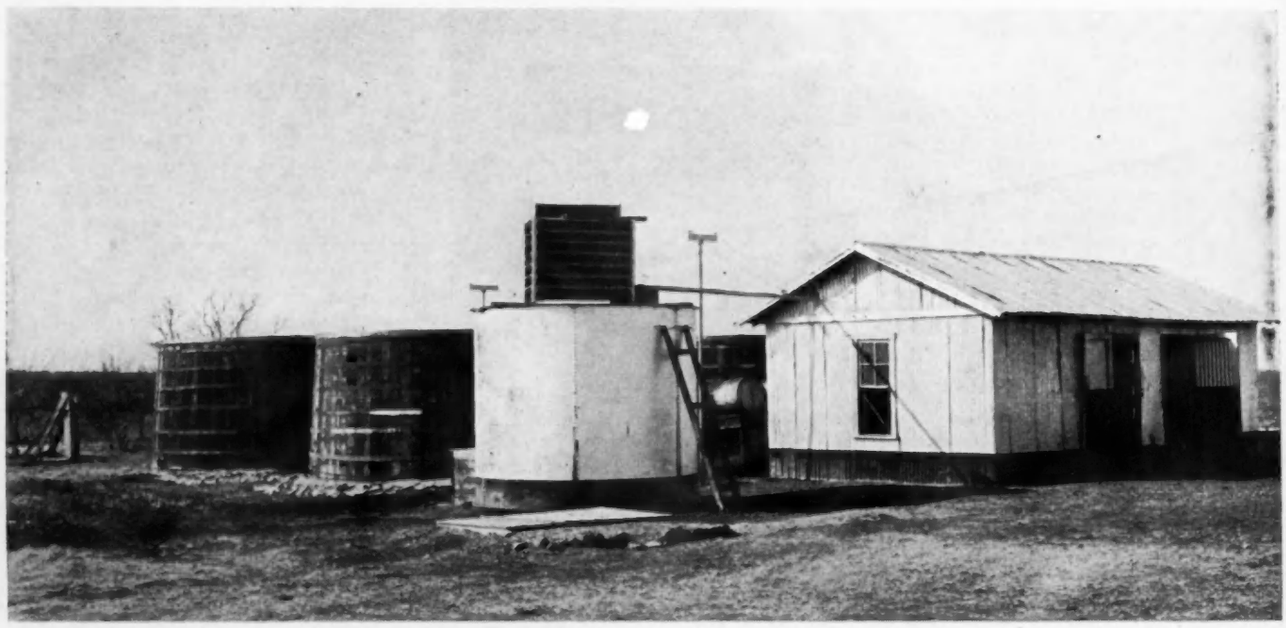
Two vertical baffle boards separate the tall settling tank into three compartments. The outlet of the 3-inch line is carried down to the bottom of the tank in the first compartment, and the water, before getting across the tank to the outlet, must travel up to the top of the first compartment, over the top of the first baffle, down to the bottom to pass under the second baffle, and then up to the top again in the third compartment where it is taken off by the suction of the pressure pump. These baffles permit a greater time for the floc and sediment to drop out of the water.

Sediment and coagulated sludge that collects in the bottom of the filter tank is drained off each day. The amount of such material varies from day to day, depending upon the condition of the lake water. Rainy or stormy weather usually riles the water and causes greater accumulations of foreign material.

After passing through the first settling tank, the water goes on over to the filter plant, which is in a building located immediately beside the settling tank. In passing through the sand filter tank, the water gives up what little floc or sediment that might have escaped settling out in the first tank. Every several days, depending upon the condition of the water that has been going through the system, the filter is backwashed. The filter tank has a capacity of 3000 barrels per day.

Storage Tanks and Pressure Pump

Water leaving the filter tank then flows by gravity over to the receiving tanks located beside the



Pump house and battery of four 250-barrel wooden tanks. Water from filter plant is stored here, two tanks supplying suction end of pressure pump, while other two are being filled.

pump house several hundred feet away. This tank battery consists of four 250-barrel redwood tanks. While two of them are being drained by the suction of the pump the other two are being filled. Switching tanks is manually controlled by the operator or plant engineer on duty.

The pressure pump is a 3- by 10-inch vertical triplex, direct connected to a 25-horsepower, 325 rpm single - cylinder engine. The high gravity and quality of the crude oil produced on the lease is such that it is used directly in both this engine and a similar one that runs the central power plant operating the oil well jacks. Operating at 44 rpm, the pump is capable of handling 1400 barrels of water per day.

Injection Pressure Constant

A constant pressure of 320 pounds is being maintained at the pumping plant. Plant injection pressure has been gradually increased from around 250 pounds at the beginning of the flood up to the present value. Pressure is held constant by means of a back-pressure valve tied in to the discharge line near the base of the pump. Excess water is bypassed back into the suction line of the pump.

Depending upon the permeability and fluid saturation of the individual wells as indicated by the analysis of cores taken, the volume of water injected into each well varies from 10 to 175 barrels per day. Some wells can take up to 350 barrels per day, but none is permitted to take over 175, as beyond that it may "crowd" unnecessarily, and in such a permeable sand, it may do more harm than good in possibly by-passing portions of the residual oil.

It has been found in various fields that permeabilities of sands as measured in the laboratory are never as they are in the field, the latter quite often being only 1/10 that of the laboratory test. This is due to the fact that the amount of residual oil and connate water remaining between the sand grains reduces the permeability by that amount.

Those several wells which take the least water are located on the west side of the lease, down structure. More salt water is produced from these wells than the others, due to the early contamination of the oil sand by salt water coming up from deeper water sands penetrated by improperly plugged deep wells drilled some years ago.

Typical injection well, showing simple surface fittings consisting only of a 2-inch tee, and provided with valve to permit the daily reading of injection pressures. No gauge is left on the well. All injection lines are buried against freezing.

The small quantity of salt water produced on the lease presents no problem for storage in surface pits or waste sumps. Water so obtained is immediately reinjected into the formation through two water wells. One of these takes it by gravity alone, while the other requires some pressure. The pressure for this latter well is supplied by a rod-line pump operating through a take-off from one of the central power rod lines.

Water Distribution System

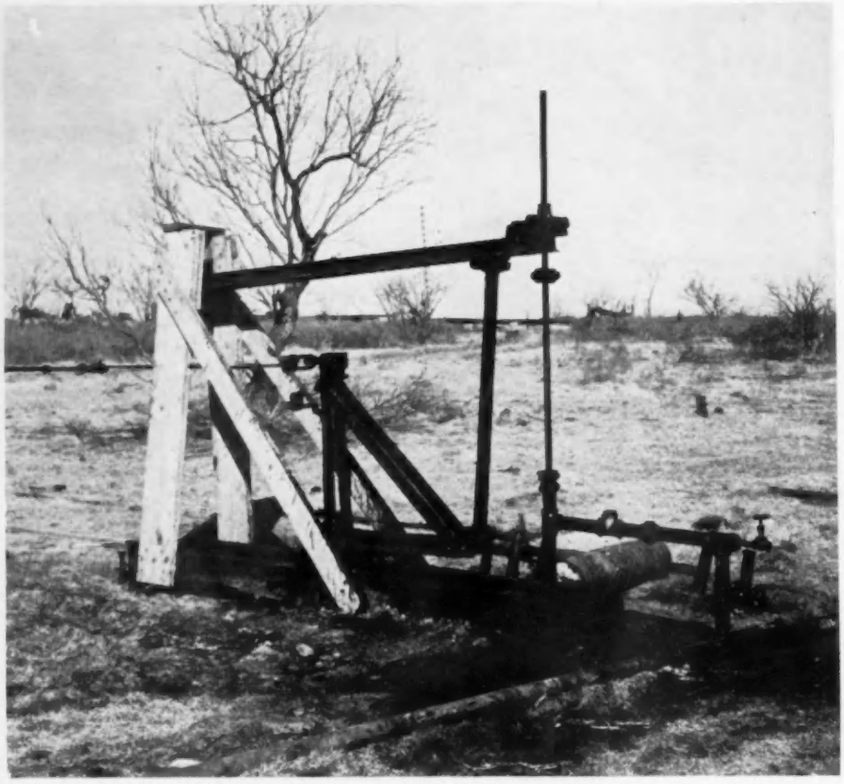
Distribution of the water coming from the pressure pump is facilitated by a 3-inch transmission line running the length of the lease east and west. Two-inch laterals leading to the injection wells then take off from this line. Each well has a separate water meter. These meters are situated at points in the laterals near the main line, to make it easier for the meter man to tend them without having to travel to each individual well. The total of the readings obtained from the individual meters is checked each day with the reading from the master meter at the pressure plant.

All lines of the distribution system are buried six to eight inches to minimize danger of freezing. Meter boxes, set almost flush with the ground, are packed with cottonseed hulls. Exposed lines entering and leaving the primary settling tank likewise are boxed and packed with hulls.

Records, Tests Interpreted Regularly

More than ordinary care is exercised in obtaining and interpreting records, particularly on this initial flooding project. A close tabulation is kept of the daily injection pressure, and the amount of water taken at each well. Only in this manner can it be determined when a certain well may be clogging up, or perhaps taking the water too readily. Increasing or lowering of individual well volumes or pressures may be regulated to conform to changing bottom hole conditions.

Every day or two a pH test of the water is made. So important is the factor of injecting only pure water, having the correct degree of alkalinity, that often a full tank of water is dumped rather than have it injected into the formation. This is in addition to the daily checking and draining off of sludge in the primary settling tank. From extensive experience gained in Pennsylvania, Nowels, consultant on the project, has learned that the matter



Typical oil well jack. Soon after the flood was started, many wells such as this one, had to be worked on, jacks strengthened, etc., to handle the greatly increased production of each well.

of injecting only the purest water obtainable is of utmost importance. After considerable money has been spent on a project in drilling and equipping a lease for water flooding, it is poor policy to try to economize at the expense of the quality of the injected water. Many projects have failed, or have not paid out, merely on this account.

An accurate production record also is maintained on the total oil and water production. By salinity tests it is possible to determine whether water being produced by any particular well or part of the lease is connate or fresh water, and from which it is possible to roughly chart the course of the invading water flood as it travels outward from the injection wells.

Development Costs Moderate

The original installation of equipment used for flooding this tract, including the drilling of input wells and water lead lines represents an investment of approximately $700 per acre. Equipment, much of it used, but in good condition, was chosen wisely, and with a view toward eventually supplementing it with additional equipment, principally settling and storage tanks, in further expanding the flooding operations to adjoining tracts. Toward this end, an extra 500-barrel settling tank already has been located beside the first one to handle the larger volume of water that soon will be put through the plant.

After the flood was started it soon became apparent that the existing pumping equipment would not be adequate to handle the greatly increased load of fluid being produced by the wells, so a new engine for the central power had to be installed, and the Oklahoma-type oil well jacks had to be rebuilt and strengthened.

The accompanying Time - Rate curve showing the production of this lease from early in 1931, is remarkable for the sharp rise and continued steepness of the curve, that followed shortly after the start of the flooding operations. The rapid reaction that followed only a month or six weeks after the flooding began may be contributed largely to the great permeability of the sand. Because of the "sensitiveness" of the formation in responding to artificial treatment, extra care is being exercised in the injection procedures.

Drawing on results and data obtained in other water-flood projects, the operators estimate that this lease will have a flood life of approximately three years. The flood life of a typical field in the Bradford district ranges from 5½ to 7 years, the longer span of life being attributed to the less permeable sands in that area.

It is expected that the production rate will continue to rise for a while yet, reaching a peak within from 1 to 1½ years from the start of the flooding. After the peak has been reached, production of net oil will begin to fall off, and water cuts will increase rapidly, a normal occurence in any flooding project. The operating economic limit will be reached when the advancing water drive finally reaches the drainage area of the oil wells, and the production approaches 100 percent water. It is estimated that this limit probably will come within 1½ to 2 years after the peak of production is reached.

Small Floods Are Practical

The success so far enjoyed by this flooding project is particularly significant because it indicates that by following several well defined rules formulated through the experiences of many other such projects in the past and in other regions, and by exercising reasonable care in the planning and carrying out of operations, a great many semi-depleted shallow fields may be found to be readily adaptable to such means of secondary recovery.

Similarily, it shows that flooding operations need not be confined to entire fields. It is of course true that from an economical standpoint it is preferable to have as much territory under control as possible, before such a project is started. This applies in the present instance, as Dean Brothers plan ultimately to place the entire Woodson field which they now control, containing over 70 wells and embracing some 280 acres, under flood.

However, the reaction of this small portion of the field demonstrates that small tracts of property in stripper well fields or even abandoned areas elsewhere, provided of course that the physical properties of the sand, residual oil content, etc., are favorable, may well be suitable for rejuvenation by artificial means.

Also demonstrated in this project is the fact that no great investment is necessary for costly equipment, that a moderate outlay of used or reconditioned equipment, when adapted to the particular field conditions, may be adequate for all needs throughout the flood life of the tract.

Wild Gas Well Is Controlled

1. Blowing its head when shut down for work-over, this Rosston, Arkansas, well was making an estimated 20 to 50 million cubic feet of gas as workmen take over to enlarge cellar, clear away debris, and prepare to bring well again under control.

2. Myron M. Kinley and member of his crew attempting to clear 7-inch of gas-cut nipple where string gave way and permitted Christmas tree and all fittings to be blown from cellar as switcher closed valve preparatory to beginning work-over operations.

3. It was necessary to rig a line in the derrick to handle the new valve and nipple, although the derrick enclosure was filled with high-velocity grit-laden gas. Two attempts were necessary before line could be run as desired.

4. After the cut nipple and bradenhead had been removed from the well, water was run into the annulus between 7- and 10-inch strings to help support new connection and avoid loss of sealing material.

5. Myron Kinley forces into the annulus between 7- and 10-inch strings a rubber sealing ring which would provide dam to restrain limits of sealing material and also guide replacement nipple during running operation.

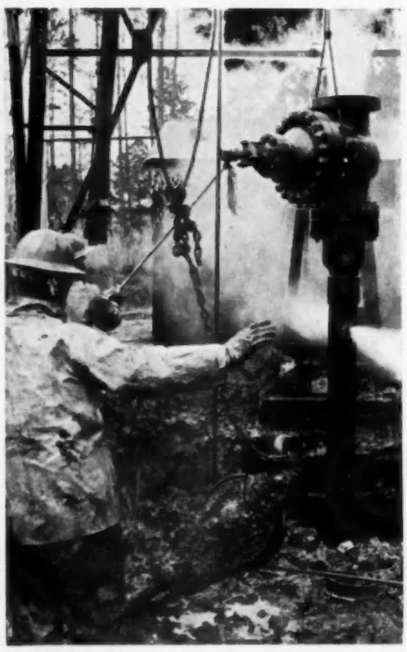
[*Continued*]

[*Continued*]

All photographs by JACK KINLEY

6. To control well, the plan called for a new 9-inch valve, on the end of a 20-foot 9-inch stabbing nipple, the nipple to be run between 7- and 10-inch strings and sealed in place with new valve at desired height.

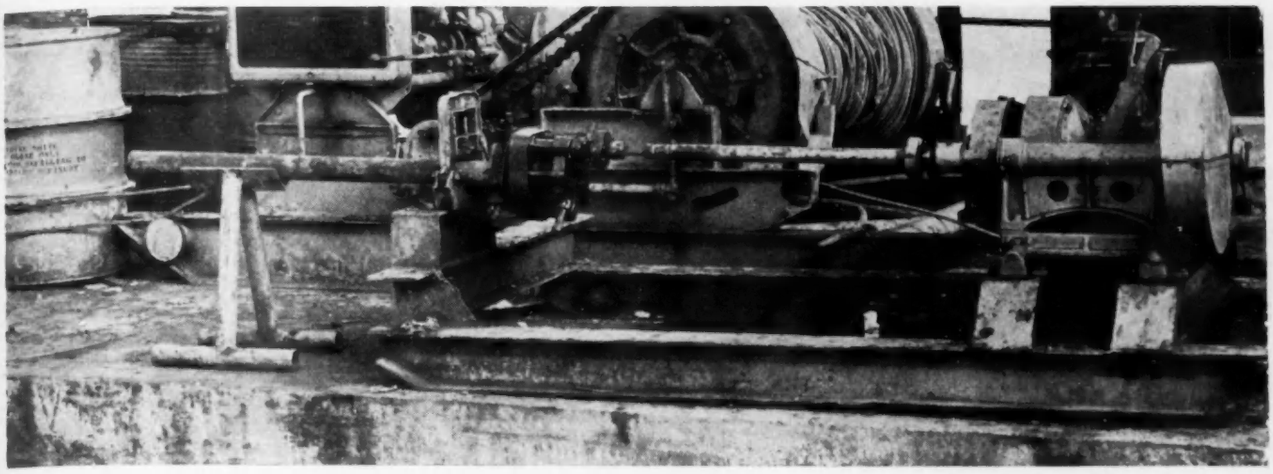
7. As the nipple is lowered downward a part of the gas flow, choked by valve restriction, reversed direction and escapes through the narrow gap between 9- and 10-inch lines. The sealing ring is being tamped as lowering proceeds.



8. Side outlets in the 9-inch and wide-open control gate handle gas output of well as Kinley directs lowering of new head through final few feet of travel toward ultimate anchorage. Guy lines snub side sway.

9. With the new control head resting on timbers across the cellar, a special quick-setting gypsum cement is mixed to desired fluidity, then poured into annulus between 9- and 10-inch strings, filling space above sealing ring.

10. The sealing completed, the new control valve is held in place against well pressure by extended grip between casing and nipple, with new control valve serving as base upon which usual Christmas connections will be rigged preparatory to putting well again on production.



Skid-mounted, gasoline-powered pipe-threader placed on barge permits mobility for use in marine oil fields. The machine greatly expedites erecting tank batteries and laying pipe lines.

Gasoline-Driven Pipe Threader

Skid-Mounted for Use on Barges In Marine Drilling Operations

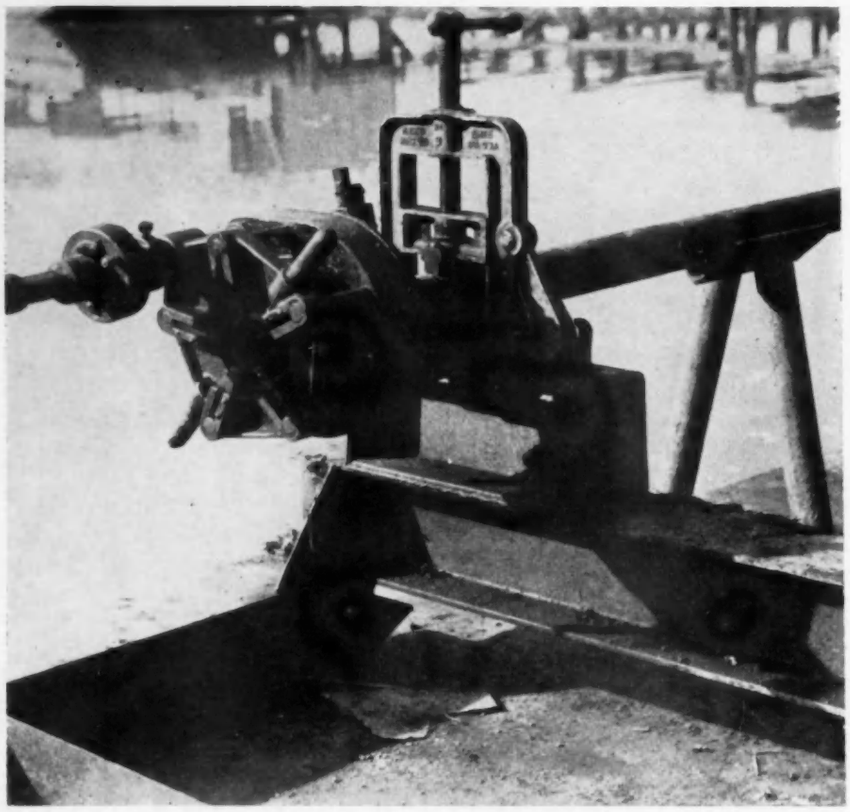
By GORDON B. NICHOLSON,
Staff Writer

THREADING pipe when erecting tank batteries or laying pipe lines in isolated localities often presents a costly, time-consuming operation, demanding considerable labor and occupying attention of several workmen when their efforts are needed elsewhere. One large operating company has constructed a serviceable, unitized pipe-threading machine motivated by a gasoline engine for use in remote marine areas, mounting the apparatus on skids and placing it on a small barge which is easily transported to the place where the line is to be laid, or moved to various fields in the marine producing zone. The devise offers particular advantage in erecting tank batteries and separators on piling-supported platforms over open water, where pipes of varying length are frequently used and must be threaded for making connections. The barge is mobile, and may be placed in a site where the machine is accessible to workers on the line. The complete threading machinery being unitized and skid-mounted, its movement about the deck to the most convenient place is facilitated; and when moving the barge to another location, its position on deck is also changed to occupy the least space and allow loading of additional equipment.

The threader is set on heavy skids about 8 feet long and 4 feet wide, made of welded I beams. At one end of the skid is placed a stationary vise, fastened to a steel rack which is welded to the skid, its purpose being to clamp the end of the pipe while threading. Length of pipe threaded is immaterial to the performance of the machine, as two horses are provided to support pipe at a uniform and level height during threading. The horses consist of two legs constructed of 2-inch pipe welded to bases made of 14-inch joints of 2-inch pipe, with grooved saddles in which the threaded pipe rests. The legs are about 2 feet tall, welded to the center of the bases at a 90° angle, and brought together at the tops by means of the V-shaped saddles made of steel angles 6 inches long, to which the legs are welded.

The dies which cut threads in the pipe are motivated by connection with power apparatus located at the opposite end of the skid, and are joined to it by means of an eccentric drive shaft. The prime mover is a 1-cylinder, 4-cycle gasoline engine connected by a drive chain to a gear system consisting of an automobile transmission and providing three forward and one reverse gears, giving an exact control of speed and power applied to the cutters. Connected with the engine is an eccentric drive shaft about 4 feet long, equipped with a knuckle joint similar to the universal joint in an automobile. At the free end of the shaft is placed the cutter or die, the end of the drive shaft joined to the gear-driven mechanism which rotates it.

Cutters of size varying from 2½ to 4 inches are used in the threader, and power and speed changes allow considerable flexibility. The cutters, attached to the end of the eccentric shift, are removable, being easily replaced by dies of a different size. After the desired cutter is fastened to the drive shaft, the end of the pipe to be threaded is centered and clamped in the vise. The small horses are put under the overhanging end of the pipe, if it is a long joint, centering it during the threading, with

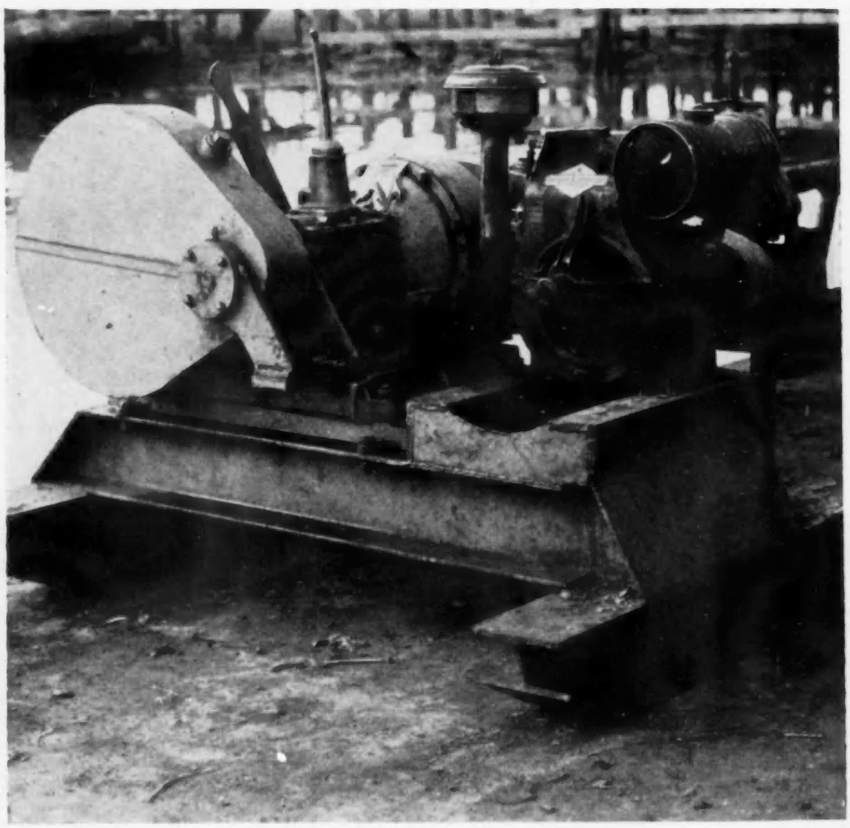


Vise attached to skid secures pipe in position while being threaded, opposite end of the pipe resting on one or more small horses. Cutter is motivated by rotation of eccentric driveshaft connected to motor.

the pipe held in the bottom of the V grooves, which provide a satisfactory holder for pipe of any size adaptable to the threader, and the cutters are placed in position to contact the pipe to be threaded.

When the machine is started by hand-cranking and put into gear, rotating the shaft moves the gears of the die, causing it to walk and simultaneously cut threads around the pipe. For small pipe, fast rotating is satifactory, although large pipe generally requires use of power with a sacrifice of speed. After the threads have been cut, the machine is placed into reverse gear and the cutter removed. A special steel pan is placed under the cutters during threading operations, catching the cuttings and the water which is frequently directed on the threads for cooling. This pan is made of plates welded together with dimensions about 14 x 20 inches, by 6 inches deep, and is easily emptied.

The company uses the threading device to serve the Mississippi Delta territory in Coastal Louisiana, its principal service devoted to large tank batteries. The apparatus offers large saving of time in installing batteries in marine fields, serving as adequate substitute for electricity or other power which is not normally available. Before adoption of the gasoline threader, work of this nature was done manually, this tedious process adding many hours to construction time. Formerly, 45 minutes to an hour were required by two men to thread one end of a joint of 4-inch pipe, while, by using the gasoline threader, a single worker is able to thread similar pipe in about 10 minutes. This efficient operation allows considerable saving in man power and expense, and, at the same time, emergency erection of storage and pipe line facilities is expedited, averting possible shutting down of wells and losses in crude oil production during construction. While the threader shows improved efficiency when using pipe of any size, the most appreciable time-saving profit is evident in the case of large piping. Mobility of the barge and threader unit provides a serviceable feature, allowing easy transport to new tank batteries and to other areas, allowing the machine to serve several oil fields in the vicinity.



Gasoline engine connects by means of drive chain to automobile transmission which provides three forward and one reverse speeds for the threader. The machine is unitized to permit placing on barge deck in convenient location for workers.

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ROLLER BEARINGS

QUIET

Steel Cost of Primary vs. Secondary Oil Recovery

By LYNN O. CONVERSE, Consulting Flood Engineer, Tulsa

BECAUSE the wells are drilled and equipped with casing, lines, tankage and pipe line connections, old primary pools can be converted into secondary recovery with little expense in steel. Many pools will yield a large net gain in steel. In this article the reason for the economics of deep secondary recovery is presented. Necessity for more primary reserves is not discounted, but the possibility of utilizing known secondary reserves for both new oil and steel economy is suggested.

SUBMERGED in the chaos of conflicting regulations from the federal bureaus in Washington the average oil man is completely lost. He is like the man who was so deep in the forest that he could not see the trees. Figuratively speaking, now is an excellent time for the oil man to go fishing in order to do a little abstract thinking, figure what it is all about and how he and his organization can best fit into the constantly changing picture.

Taking a factual attitude we start with the knowledge that we are in a world-wide war which we must largely prosecute with planes, tanks, guns and ships. The production goal the government has set will take a large percentage of the country's steel-making capacity.

Two facts emerge. First that after supplying essential war industries there is not enough steel to go around, just as there is not enough rubber. We were made rubber conscious by the freezing of tires and tubes when the Malayan source of supply was cut off. Unfortunately other motives were attributed to federal control of the oil industry so that a fundamental idea of steel conservation was not understood.

The second fact is that the war effort must entail sacrifice of industries as well as individuals. There are two kinds of sacrifice; the compulsory kind set up by rationing, etc., and the voluntary kind of sacrifice which calls for a change in thinking and operating. Until we think of the cost of oil in the terms of steel rather than in the cost in dollars we are not doing our full part.

No one knows what the crude oil requirement is going to be for essential war uses, synthetic rubber and domestic demand, but as late as the third week in January OPC stated it was still thinking in terms of 30,000 new wells in 1942. On this basis it is not probable that total demand will drop in proportion to the normal decline, so new sources of supply must be provided. There are two sources of new oil: new primary oil, which must be the main source of supply, and new secondary oil as a supplemental source.

The cost of new primary oil in steel is high when everything is considered, including the dry holes, which production must support, and the pipe lines and connections to make the new oil available. Taking the OPC estimated steel requirement per well of 210,000 pounds and the ideal condition of 200 barrels per day withdrawal for 1000 days we have a minimum steel cost of 1050 pounds per barrel of daily sustained production. Since all new production will not average 200 barrels per well per day and with dry-hole and pipe-line allowance, the total steel cost of new primary oil will be several times that for the ideal condition which we will use for comparison.

The new Midway field in Arkansas, discovered since M-68 became effective, illustrates the ideal condition for it is anticipated that when four or more wells are brought in the withdrawal will be 200 barrels per well per day. Approximately 185,000 pounds of steel is the minimum requirement per well, or 925 pounds per barrel of daily production. Since we are using 1000 days as the arbitrary war-effort period the total production cost is .925 pounds of steel per barrel. However, to get the oil to market another 1000 pounds of steel per daily barrel of production probably will have to be spent for pipe-line and terminal facilities.

New secondary oil by gas repressuring can be produced with low steel costs especially where all locations are already drilled. Injection wells, if properly prepared, do not require more than a tubing string, while the surface lines can be of second hand material. Since few gas repressuring projects use a geometrical pattern there are usually several oil wells for each injection well. While much less oil is recovered, the cost in steel for the new oil is comparable to water-flood costs in the shallow areas. Since gas repressured pools must be pumped there is not the opportunity for a net gain in steel as in the case of converting nearly depleted pools to water flooding. Steel costs for the minimum requirements for this type of new oil will run from .2 to .5 pounds per barrel of total additional oil recovered.

Secondary recovery by water flooding is a large potential source of new oil with little or no expense in steel. In order to understand the scope of the source and the reason for the steel economy, it is necessary to digress for a moment to correct certain misconceptions which from habit have grown into prejudices.

Prejudice number one is the idea that secondary recovery should not be considered until the lease has reached its economic limit of production by routine methods. If the sand characteristics are such that secondary recovery will be used eventually, it should be started before any of the wells are pulled and plugged. All primary oil left in the sand will of course be produced with the secondary oil. High actual depreciation on a large amount of equipment held to produce a small amount of oil will be avoided as well as several years of overhead.

Prejudice number two, that only shallow sands lend themselves to secondary recovery by water flooding is an erroneous conclusion, the reason for which is easily understood.

The early water flooding in the Mid-Continent was done in the shallow sands of Rogers and Nowata Counties at 500 feet and less where the viscosity and reservoir temperature of the oil required

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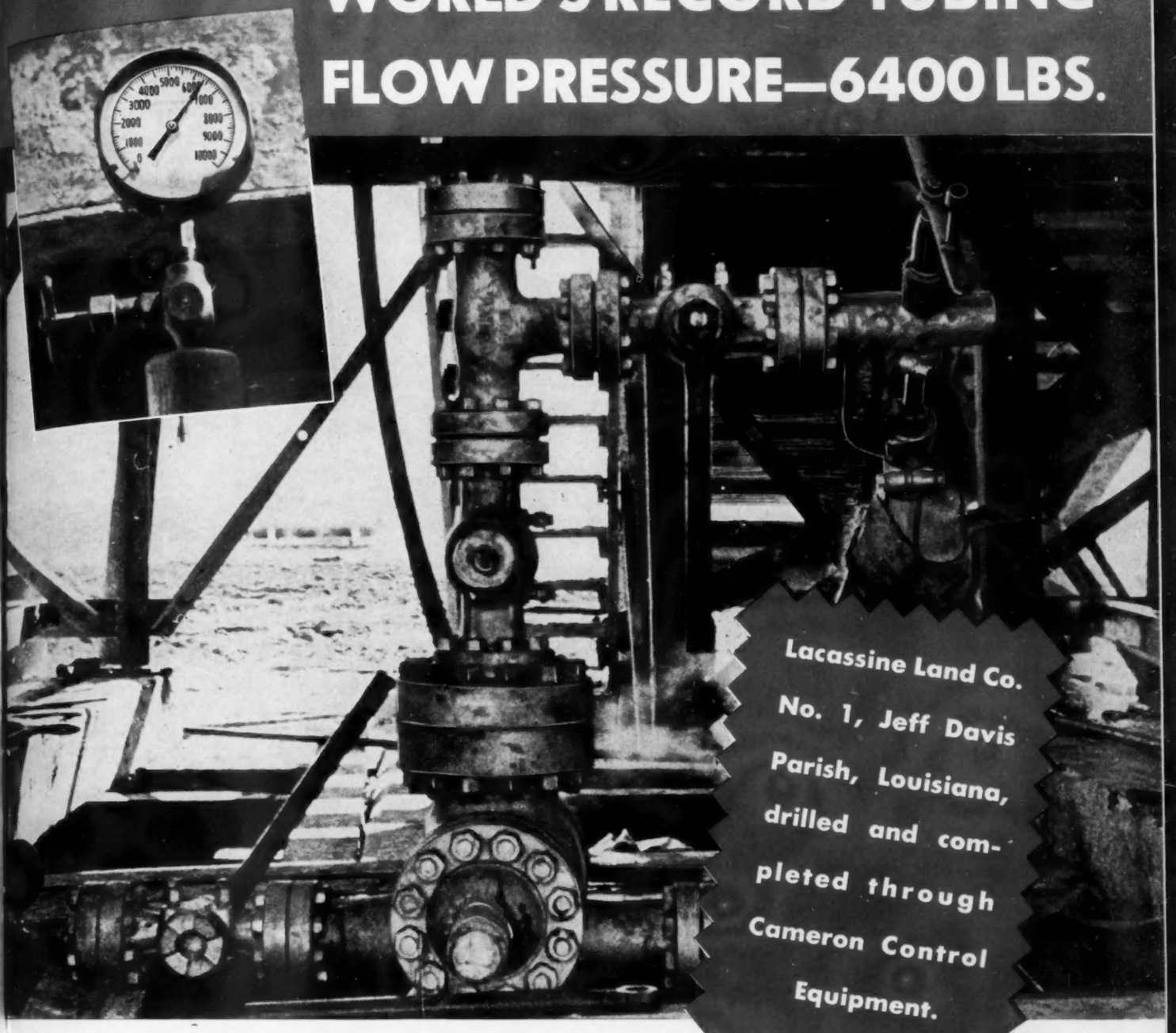

Smashing all known records for high tubing flow pressures, Lacassine Land Co. No. 1, Louisiana Gulf Coast wildcat, recorded 6400 pounds pressure on a 12/64" positive choke during production tests on January 15, 1942.

This abnormal pressure, however, exceeds only slightly the former highest tubing flow pressure recorded, 6300 pounds on Sun Oil Company's Bayshore Farms No. 1 at Palacios, Texas, in 1938, which was also drilled and completed through Cameron Control Equipment.

The above photographs of Lacassine Land Co. No. 1 show the tubing gauge and the Cameron 10,000 Lb. Test Safety Xmas Tree. The Xmas Tree includes a Cameron Ram-Type Tubing Control Head and Type "D" Unitized Flow Wing. Also, a Cameron Slip Type Casing Head with Type "M" Test-Weld Flange was used to suspend and seal the long, heavy oil string.

Sealing off the tremendous bottom hole pressure present in Lacassine Land Co. No. 1 provided still more proof of the ability of Cameron Type "G" Circulating Anchor Packers to protect casing from destructive pressures. A Cameron Type "G" Packer was set in this well at approximately 9200 feet and the absence of casing pressure assured the operator that the Packer had effected a pressure-tight seal between the tubing and casing.

To operators planning deep wells in any area, we shall be pleased to provide complete and detailed information concerning the Cameron Closed Pressure Method of Drilling and Completion.

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2.5-acre spacing (330 ft. by 330 ft.). Without realizing the importance of temperature and pressure, as influenced by depths, to viscosity and the importance of viscosity to flow conditions, it was believed by many that the short spacing would have to be used regardless of depth. This seemed true, since the very tight deeper sands at Bradford called for the same short spacing. This conception is at variance with the facts as will be shown.

Very similar sand conditions exist in the eastern Nowata floods at 500 feet, the Philips and Helvie floods in western Nowata County at 1000 feet and the York State flood in Greenwood County, Kansas, at 2000 feet. These are producing Bartlesville oil ranging from 36° to 38° A.P.I. gravity.

Western Nowata floods are producing more oil per acre foot on 4.5-acre spacing than the eastern Nowata floods on 2.5-acre spacing. More significant, the Greenwood County flood on 10-acre spacing is producing more oil per unit than the western Nowata floods.

Formation temperature usually increases with depth and this has a profound effect upon viscosity. Absorption of gas by the oil is a function of pressure and the hydrostatic pressure alone doubles as the depth doubles. Since absorption of gas reduces viscosity, all else being equal, viscosity, or ability of the oil to move through the sand is improved by depth. The specific viscosity (like temperature at atmospheric pressure) usually improves with depth. The specific viscosity in western Nowata at 1000 feet is approximately one half of the specific viscosity of eastern Nowata oil at 500 feet. With a much better viscosity to start with plus the influence of temperature and pressure, the economics of secondary recovery actually improves with depth for the same sand condition.

Wider Spacing on Floods

Following down the axis of the Bartlesville trend from Greenwood County a survey was made for a pool in the same sand at 3000 feet. To accomplish the same results in the same time interval as the three other depths recorded, the spacing would be on a 20-acre pattern. Other pools studied in the 3000-foot range having higher sand permeability show 40 acres as the optimum spacing pattern. In addition this same improvement in the viscosity of the oil is responsible for a larger recovery or conversely, under the conditions of temperature and pressure, the oil retained in the sand is much less. When thoroughly understood it is apparent that, all else being equal, the advantage is with depth.

Our interest in this is in its relation to steel costs, so back to this phase. Since the technique of flooding is familiar as to its application to shallow sands (1000 feet and under) we will skip them with the note that under conventional development from .5 to .8 pounds of steel is used per barrel of total expected recovery.

Looking at the York State flood at 2000 feet. All of the wells, which were drilled on 10-acre pattern, were intact and producing, so that flow lines, tankage and pipe line connections were in place. To flood on 10-acre spacing one injection well was drilled in the center of each four-spot, each of which required 2000 feet of 2-inch tubing. The other steel requirements were casing and tubing for shallow water well, filter, pressure pump and pressure distribution system to the water-injection wells, all of which with the tubing totals approximately 65,000 pounds for 40 acres.

The older portion of the flood has already produced 6000 barrels of oil per acre and is still going strong, hence 8000 barrels per acre total recovery seems a conservative figure. On the basis of 320,000 barrels to recover from 40 acres and the steel requirement of 65,000 pounds the cost in steel per barrel of total recoverable oil equals .203 pounds. The lease is currently reported to be making 400 barrels per day making the steel cost per daily barrel of production 162.5 pounds.

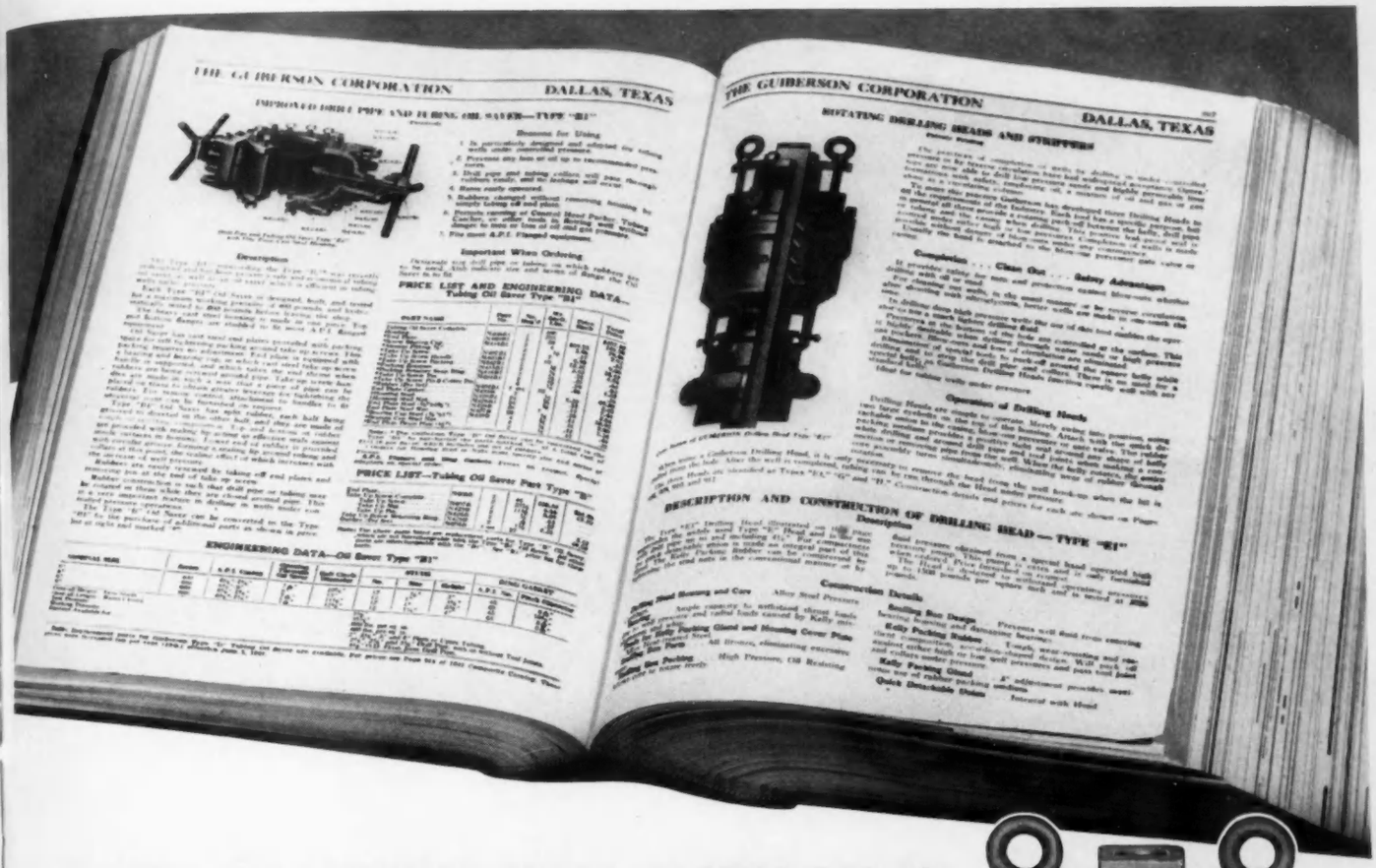
Looking now at the 3000-foot Bartlesville condition. This happens to be a large unit operated pool now under study for conversion to water flooding. The present producing wells are all in good condition and drilled on uniform 10-acre spacing. All flow lines, ample steel tankage and pipe lines and connections are in place. Study develops that under the conditions of temperature and pressure the viscosity of the oil in this pool approaches that of water, making 20-acre spacing adequate for the specific permeability of the sand.

Since the wells are already in place on 10-acre spacing, correcting each alternate well for input service leaves a geometric 20-acre flooding pattern without any drilling. As the input wells only require a string of tubing cemented into the top of the sand after correction, casing strings are pulled and the annular space mudded off. If the pool is to be pumped the casing from two wells on each 40 acres, grossing 260,000 pounds, is pulled. Since the additional surface equipment of pumps, filters and pressure lines does not exceed 35,000 pounds per 40 acres there is a net balance in steel of 225,000 pounds for each 40 acres under pumping conditions. If, however, flowing is practiced (which can and should be used), the net steel saved by pulling the casing from all wells is 485,000 pounds for each 40 acres.

Since there are 600 acres in the pool there will be 7,800,000 pounds of casing recovered which with 725,000 pounds of rods and other extra surface equipment totals 8,525,000 pounds. Deducting 525,000 pounds required for surface pressure equipment leaves a balance of 8,000,000 pounds of steel which is released for more productive work. Of paramount importance in converting this pool from primary to secondary recovery is the fact that in addition to the releasing of 8,000,000 pounds of steel, 4,200,000 barrels of new secondary oil will be produced instead of 400,000 barrels of primary oil expected before the economic limit is reached.

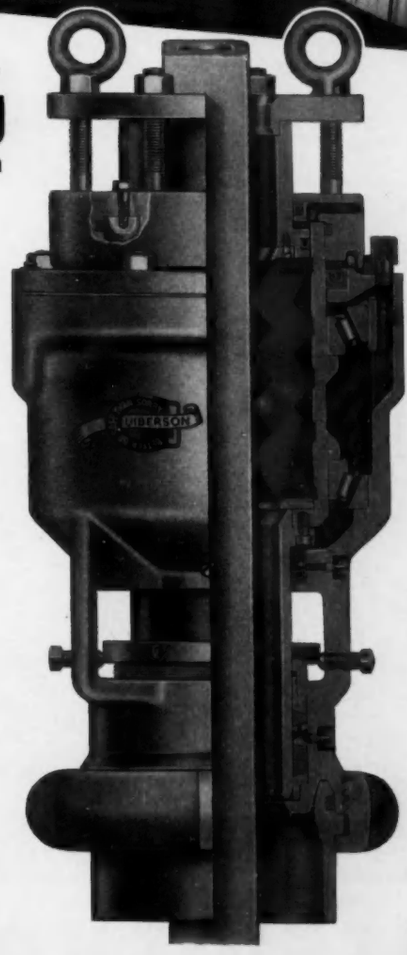
There are no less than 20,000 acres of such leases in the Mid-Continent alone which would produce 100,000,000 barrels of new oil and release 100,000,000 pounds of steel. Another 20,000 acres in poorer condition would produce the same amount of oil at a steel cost of less than .2 pounds per barrel of oil.

Admittedly producing oil by secondary recovery is the hard way. It takes more science, more hard work and painstaking attention to detail. There is no discounting the necessity for new reserves to maintain a healthy condition or the fact that most of the new oil required must be primary oil. Nor can the necessity for making each ton of steel produce the maximum amount of oil be lightly overlooked. The fact that such a large potential of new secondary oil can be produced largely with a net gain in steel presents a direct challenge to the oil-producing industry.



OUR COMPLETE CATALOG

in The "Composite"



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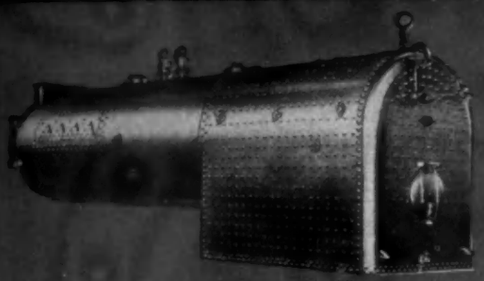

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150 H.P. 300 and 350 lb. W.P.

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Space above curved crown sheet of fire box—20".

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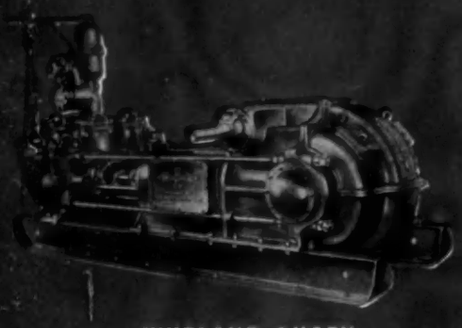
E-7000 OIL BATH SWIVEL
For Drilling to Extreme Depths

Spherical body of manganese vanadium steel for maximum strength, minimum weight. Bearing capacity of 464,350 lb. at 100 R.P.M. Timken True Apex main thrust bearing. No adjustments necessary in field!



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POWER SLUSH PUMP HP-15000-CE-
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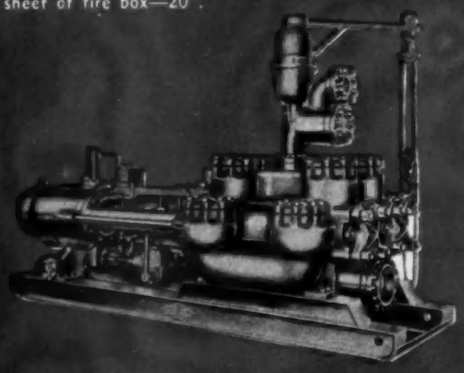
For high pressure and deep drilling. Totally enclosed, providing oil bath lubrication for gears, connecting rods and crosshead. Complete shaft assembly with bearings reversible permitting drive from either side. Standard or high pressure fluid end optional.



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Built in 2 sizes: H-20000-BA 16½" x 8" x 20", H-20000-AA 15½" x 8" x 20". Self-draining steam end. Steam and exhaust valves located below steam cylinders. Improved thermal efficiency; better steam cushion; elimination of broken rings and cylinder heads; more mud and higher mud pressure.

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All the advantages of shoulder welding without any of the disadvantages. Tight fitting shoulder relieves last engaged threads of destructive vibrations and "biting" and seals the joint. Internal upset or external upset — internal flush. Regular A.P.I. thread length permits make up with regular A.P.I. pipe or tool joints.

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Built in 4 different sizes for drilling to following depths:
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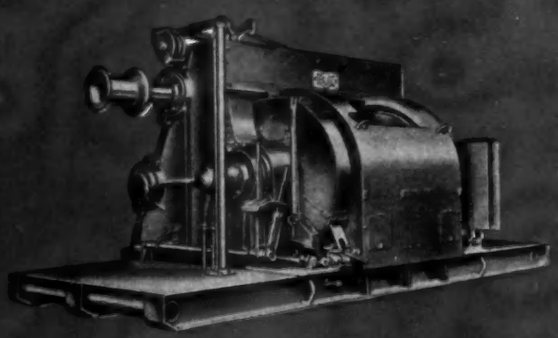
Type "C" — 3000 to 4000 ft.
Type "D" — 4000 to 5000 ft.
Type "E" — 5000 to 7000 ft.
*May be supplied either with or without sand reel.
All four types are identical in general design.



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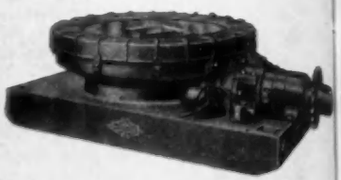
For deepest drilling. 4 or 6 drum speeds: 2 rotary speeds. Self-aligning roller bearings throughout. All shafts forged steel—normalized. Water cooled brake flanges and oil tight guards. Line shaft extended for automatic cathead. Drum shaft extended for Hydromatic Brake and jack shaft extended for Core Reel Drive.



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Built in three sizes: 27½", 20½" and 17½". A machine for any size or depth hole. Designed to give increased performance, greater safety and longer life at higher rotating speeds.

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- Oil Bath Swivels
- Oil Well Boilers
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- Pipe Reconditioning Equipment
- Power Slush Pumps
- Pull Rods
- Reverse Clutches
- Rotaries
- Rotary Drilling Lines
- Rotary Drill Pipe
- Seamless Steel Casing
- Shale Separators
- Steam Slush Pumps
- Steel Derricks
- Steel Tanks
- Sucker Rods
- Trailers
- Traveling Blocks
- Turbo Generators
- Wire Rope
- Wrought Iron Pipe

TITLE 32—NATIONAL DEFENSE
CHAPTER IX—WAR PRODUCTION BOARD
SUBCHAPTER B—DIVISION OF INDUSTRY OPERATIONS

Part 1041

Production, Transportation, Refining And Marketing of Petroleum

Preference Rating Order No. P-98, Extended and Amended

Section 1041.1 PREFERENCE RATING ORDER. For the purpose of facilitating the acquisition of Materials for the Production, Refining, Transportation and Marketing of Petroleum, preference ratings are hereby assigned to deliveries of necessary Material upon the terms hereinafter set forth:

(a) Definitions.

(1) "Person" means any individual, partnership, association, business trust, corporation, governmental corporation or agency or any organized group of persons, whether incorporated or not.

(2) "Petroleum" means petroleum, petroleum products and associated hydrocarbons, including but not limited to natural gas.

(3) "Main Gas Trunk Line" means any pipeline and appurtenant structures carried as a "trunk line" on the books of an Operator in accordance with the regulations of any duly constituted public regulatory body or, where there is no duly constituted public regulatory body regulating the accounting procedures of the Operator, carried as a "trunk line" on the books of an Operator for Federal Income Tax purposes.

(4) "Production" means the discovery, development and depletion of Petroleum Pools; the operation of any stationary gathering systems or surface connections for the conveyance of Petroleum (other than natural gas) to the first valve on the discharge side of the field shipping tank battery at which Petroleum is gauged; the operation of any facility for the processing of natural gas including but not limited to natural gasoline extraction plants, field pressure maintenance plants, repressuring plants, cycling plants, dehydration plants, or desulphurization plants; the operation of any natural gas connecting lines from a wellhead connection or from a Main Gas Trunk Line to or from such plants; and the operation of any stationary gathering systems or surface connections for the conveyance of natural gas to the point of connection with a Main Gas Trunk Line.

(5) "Refining" means the operation of a plant or plants, other than those specified in paragraph (a) (4), for the production of finished or unfinished Petroleum, including blending plants which blend natural, brightstocks and long residuum to finished S.A.E. grades.

(6) "Transportation" means (except in the case of natural gas) the operation of all Petroleum terminal and terminal storage facilities and the operation of all pipe lines for the transportation of Petroleum from the first valve on the discharge side of the field shipping tank battery where Petroleum is first gauged to any Refining facility, terminal or terminal storage facility and from any Refining facility to any terminal, terminal storage or Marketing facility.

(7) "Marketing" means the operation of all facilities (other than Petroleum terminal or terminal storage facilities or marine, rail, pipeline or truck facilities used to transport Petroleum) for distributing or dispensing Petroleum (excluding natural gas), including without limitation the operation of service stations, substations, bulk plants, warehouses, wholesale depots, or facilities operated by "consumer accounts."

(8) "Petroleum Enterprise" means any facility used in the Production, Refining, Transportation, or Marketing of Petroleum.

(9) "Operator" means any Person engaged in operating a Petroleum Enterprise.

(10) "Supplier" means any Person with whom a contract or purchase order has been placed for delivery of Material to the Operator or to another Supplier.

(11) "Material" means any commodity, equipment, accessories, parts, assemblies, or products of any kind.

(12) Subject to subparagraph (15), "Maintenance" means the upkeep of an operator's property or equipment in a sound working condition with a minimum expenditure of Material.

(13) Subject to subparagraph (15), "Repair" means the restoration of an Operator's property or equipment to a sound working condition when such property or equipment has been rendered unsafe or unfit for further service by wear and tear, damage, destruction or failure of parts or similar causes.

(14) Subject to subparagraph (15), "Operating Supplies" means any Material (other than that used for Maintenance or repair) which is essential to and consumed in the operation of a Petroleum Enterprise and which is generally charged to the operating expense account of an Operator: *Provided,* that the term "Operating Supplies" shall not include any of the following:

(i) Material (other than reagents, additives or compounding Material) which is physically incorporated in whole or in part into any product of an Operator;

(ii) any Material which is to be used as a fuel or lubricant;

(iii) any non-ferrous Material which is to be used as packaging supplies.

(15) The terms "Maintenance," "Repair" and "Operating Supplies" do not include any of the following:

(i) Material for the replacement of an item or part thereof where the replacement is carried on the operator's books as a fixed asset;

(ii) Material for the improvement of an operator's property or equipment through the replacement of Material in the existing installation, unless the property or equipment which is replaced is beyond economic repair or has been rendered unusable by fire or other hazard or natural cause;

(iii) Material for additions to or expansion of an operator's property or equipment;

(iv) Material which is of a type which could not be carried on the operator's books under "Maintenance," "Repair," "Operating Supplies," or the equivalent in the operator's established method of bookkeeping.

(16) Subject to subparagraph (17), "Alterations" means any change in the physical arrangement of any existing facility for the processing of natural gas, including a natural gasoline extraction plant, field pressure maintenance plant, repressuring plant, cycling plant, dehydration plant, desulphurization plant, any existing facility used in refining (other than blending plants), or any existing facility used in transportation which is made for the purpose of increasing the operating efficiency of such facility and which does not involve an expenditure of more than $1,000 for Material.

(17) The term "Alterations" does not include any of the following:

(i) Material to be used as "Maintenance," "Repair," or "Operating Supplies";

(ii) any change in the physical arrangements of an existing facility in which the amount of Material necessary to effect a proper Alteration would ordinarily involve an expenditure of more than $1,000 or in which an ordinary Alteration in the facility has been subdivided for the purpose of making available to an operator the provisions of subparagraph (16).

(18) "Exploratory Well" means any well located not less than two miles from any well capable of producing petroleum.

(19) "Pool" means any underground accumulation of crude petroleum or associated hydrocarbon substances, including but not limited to natural gas, constituting a single and separate reservoir or source of supply within a field, area, or horizon, whether or not presently discovered or developed.

(20) "Office Supplies" means any Material to be used for "Maintenance" or "Repair" purposes or as "Operating Supplies" by an Operator for the purpose of carrying out home or branch office services incident to the conduct of a Petroleum Enterprise.

(21) "Automotive Equipment" means any specialized Material attached to any automobile or truck (but not including automobiles, trucks, motors, parts thereof, tires, or chassis) which material is necessary for containing, dispensing, measuring the movement of, or distributing Petroleum and is used for "Maintenance" or "Repair" purposes or as "Operating Supplies".

(b) Assignment of Preference Ratings.

Subject to the terms of this Order, the following preference ratings are hereby assigned to deliveries of Material to an Operator and to his Suppliers.

(1) A-1-a to deliveries of Material, to an Operator engaged in the operation of a natural gasoline extraction plant, field pressure maintenance plant, repressuring plant, cycling plant, dehydration plant, desulphurization plant, or to an operator engaged in Refining, which Material is to be used for the Repair of the Operator's property or equipment where there has been an actual breakdown or suspension of operations and the essential Material for effecting the Repair is not otherwise available.

(2) A-1-c to deliveries of that minimum quantity of Material to an Operator engaged in the operation of a natural gasoline extraction plant, field pressure maintenance plant, repressuring plant, cycling plant, dehydration plant, desulphurization plant or to an Operator engaged in Refining, which Material is to be used for Maintenance and which is necessary to make reasonable advance provisions for averting an actual breakdown or suspension of operations.

(3) A-1-e to deliveries of Material, to an Operator engaged in Production, which Material is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown Pool or part thereof by means of geological, geophysical or geochemical prospecting including specialized Material attached to an automobile or truck (but not including automobiles, trucks, motors, parts thereof, tires, or chassis) and used for the physical function of carrying out geological, geophysical or geochemical prospecting.

(4) A-2 to deliveries of Material,

(i) to an Operator engaged in Production or Refining, which Material is to be used exclusively for carrying out by means of an existing research laboratory, investigations into more efficient or more effective methods of conducting Production or Refining Operations;

(ii) to an operator engaged in Production, which Material is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown Pool by the means of the drilling and completion of an Exploratory Well, including but not limited to the drilling of "slim holes";

(iii) to an operator engaged in Refining, which Material is required as Operation Supplies and consists of one or more of the following: acetone, activated alumina, activated silica gel, aluminum paste, aluminum powder, aluminum chloride, ammonia, carbon tetrachloride, chlorine, copper sulphate, cresyllic acid, dichlorethyl ether, diethanol amine, ethylene dichloride, foamite, glycerine, glycol, hydrochloric acid, hydrofluoric acid, mercury, metal deactivator (including orthoarasol), methylbutyl ketone, methylethyl ketone, methyl alcohol, nitrobenzene, phenol, phosphoric acid, potassium bichromate, sodium hypochlorite, toluene, triethanol amine, tripotassium phosphate, trisodium phosphate, and zinc chloride.

(iv) To an Operator engaged in the operation of any natural gasoline extraction plant, field pressure maintenance plant, repressuring plant, cycling plant, dehydration plant, or desulphurization plant, which Material is required as Operating Supplies and consists of one or more of the following: acetone, activated alumina, activated silica gel, aluminum paste, aluminum powder, aluminum chloride, ammonia, carbon tetrachloride, chlorine, copper sulphate, diethanol amine, ethylene dichloride, foamite, glycerine, hydrochloric acid, mercury, methyl alcohol, nitrobenzene, phenol, phosporic acid, sodium hypochlorite, triethanol amine, tripotassium phosphate, trisodium phosphate and zinc chloride.

(v) To an Operator engaged in Transportation, which Material is to be used for the Repair of the Operator's property or equipment where there has been an actual breakdown or suspension of operations and the essential Material for affecting the Repair is not otherwise available.

(5) A-8 to deliveries of Material,

(i) to an Operator engaged in Production, Refining or Transportation, which Material is to be used for the Maintenance or Repair of the Operator's property or equipment, or is to be used in effecting Alterations, or is required as Operating Supplies.

(ii) To an Operator engaged in Production, which Material is to be used for Production purposes, but excluding Material not otherwise provided for by this Order which is to be used by an Operator in the operation of any facility for the processing of natural gas.

(6) A-10 to deliveries of Material,

(i) to an Operator engaged in Marketing, which Material is to be used for the Maintenance or Repair of the Operator's property or equipment or which is required as Operating Supplies.

(ii) To an Operator, which Material is to be used as Automotive Equipment or as Office Supplies.

(c) Persons entitled to apply preference ratings.

The preference ratings hereby assigned may, in the manner and to the extent hereby authorized, be applied by:

(1) any operator

(2) any supplier of material to the delivery of which a

preference rating has been applied as provided in paragraph (e):

(d) Restrictions on use of ratings:

(1) Restrictions on operator

(i) The operator may not apply a rating to obtain material to the delivery of which any rating is hereby assigned unless such material cannot otherwise be obtained without such rating on the date required to enable such operator to fulfill the authorized purposes for which the rating is granted.

(ii) The operator may not apply a rating to obtain scarce material the use of which may be eliminated without serious loss of efficiency by substitution of less scarce material or by change of design.

(iii) The operator may not apply a rating to obtain material in greater quantities or on earlier dates than required to enable him to fulfill the authorized purposes for which the rating is granted.

(iv) The operator may not apply a rating to obtain material in excess of a minimum practicable inventory of such material. Except as provided in paragraph (d) (2), such minimum practicable inventory shall in no event exceed a 90-day supply of material to be used for the purpose for which the rating may be applied.

(v) The operator may not apply a rating to obtain material for any use which is restricted, prohibited or in any way limited by any order issued by the Director of Industry Operations, other than material to be used in conformity with the provisions of such order.

(2) From time to time the Director of Industry Operations may determine that any operator or class of operators is exempt, in whole or in part, from the restrictions contained in paragraph (d)(1) (iv).

(3) Restrictions on suppliers

(i) No supplier may apply a rating to obtain material in greater quantities or on earlier dates than required to enable him to make on schedule a delivery rated hereunder or within the limitations of paragraphs (d)(3)(ii) and (d)(3)(iii) below, to replace in his inventory material so delivered. He shall not be deemed to require such material if he can make his rated delivery and still retain a minimum practicable working inventory thereof; and if, in making such delivery, he reduces his inventory below such minimum, he may apply the rating only to the extent necessary to restore his inventory to such minimum.

(ii) A Supplier who supplies Material which he has in whole or in part manufactured, processed, assembled, or otherwise physically changed may not apply a rating to restore his inventory to a practicable working minimum unless he applies the rating before completing the rated delivery which reduces his inventory below such minimum.

(iii) A Supplier who supplies Material which he has not in whole or in part manufactured, processed, assembled, or otherwise physically changed may defer applications of a rating hereunder to purchase orders or contracts for such Material to be placed by him until he can place a purchase order or contract for the minimum quantity procurable on his customary terms: *Provided*, that he shall not defer the application of any rating for more than three months after he becomes entitled to apply it.

(e) Application of Preference Ratings.

(1) The Operator or any Supplier, in order to apply a preference rating assigned hereunder to deliveries to him, must endorse on all copies of each purchase order or contract which is covered by a rating assigned hereunder, a statement in the following form, signed manually or as provided in Priorities Regulation No. 7 (944.27) by an official duly authorized for such purpose, specifying the rating assigned:

"Preference Rating ....., is applied hereto under Preference Rating Order No. P-98, with the terms of which Order the undersigned is familiar. This rating may be extended only upon the terms of said Order.

.....
Name of Operator or Supplier

By.....
Signature of Duly Authorized Official.

Such endorsement shall constitute a representation to the War Production Board and the Supplier or manufacturer with whom the purchase order or contract is placed that such purchase order or contract is duly rated in accordance herewith. Such Supplier or manufacturer shall be entitled to rely on such representation, unless he knows or has reason to believe it to be false. Any such purchase order or contract shall be restricted to Material the delivery of which is rated in accordance herewith.

(2) In addition to the requirements of paragraph (e)(1), the Operator (but not a Supplier), in order to apply the preference ratings assigned by paragraphs (b)(1), (b)(2), (b)(3), (b)(4)(ii), (b)(4)(iii), (b)(4)(iv) and (b)(4)(v), must communicate with the Office of Petroleum Coordinator, Washington, D. C., Ref. P-98, supplying in detail the following information:

(i) date of actual breakdown or suspension of operations (if applicable);

(ii) the equipment to be repaired and its operating importance (if applicable);

(iii) the Material, quantity and price thereof, necessary to effectuate the Repair or to initiate or maintain operations;

(iv) the supply of the necessary Material which the Operator has on hand or available; and

(v) the names and addresses of Suppliers from whom the Material is to be obtained and the earliest delivery dates assured on (a) an A-8 or lower rating, (b) an A-2 or higher rating by any such Supplier for delivery of the minimum necessary quantity of Material.

The Director of Industry Operations will notify the Operator whether, and to what extent, the application is approved. A copy of such notification shall be furnished by the Operator to any Supplier to evidence the proper rating granted pursuant to the provisions of this Order.

(3) In addition to the requirements of paragraph (e)(1), the Operator (but not a Supplier), in order to apply the preference rating assigned by paragraph (b)(5)(ii) must obtain the countersignature of the Director in Charge of a District Office of the Office of Petroleum Coordinator upon the purchase order or contract which such Operator has endorsed and signed pursuant to paragraph (e)(1).

(4) In addition to the requirements of paragraph (e)(1), the Operator (but not a Supplier), in order to apply the preference ratings assigned by paragraphs (b)(5)(i), (b)(6)(i) and (b)(6)(ii), must obtain the countersignature of the Director in Charge of a District Office of the Office of Petroleum Coordinator upon the purchase order or contract which such Operator has endorsed and signed pursuant to paragraph (e)(1), unless any individual item to be obtained under the ratings assigned by these paragraphs and to which a preference rating is to be applied has a cost to the Operator of $500 or less.

(f) Restriction on use of material obtained under a rating.

When an Operator has applied a rating authorized by this Order, he must use the Material delivered pursuant to the rating or an equivalent amount of Material for the purpose stated in his endorsement pursuant to paragraph (e). In no event shall any Operator use Material delivered to him pursuant to a preference rating assigned by this Order in violation

of the provisions of any Conservation Order issued by the Director of Priorities.

(g) Exception of Operators from provisions of Preference Rating Orders No. P-43, P-46 and P-100.

No Operator engaged in operating a Petroleum Enterprise and covered by this Order shall be entitled to apply the preference rating assigned by Preference Rating Orders Nos. P-43, P-46, and P-100, and no such Operator shall be subject to the Provisions of such orders.

(h) Preference Rating Assistance other than that granted by the terms of this Order.

Any Operator engaged in operating a Petroleum Enterprise may request preference rating assistance for deliveries of Material to him by filing with the Office of Petroleum Coordinator applications for preference rating assistance on any appropriate preference rating or project rating application form issued pursuant to the authority of the Director of Industry Operations.

(i) Records.

In addition to the records required to be kept under Priorities Regulation No. 1 the Operator and each Supplier placing or receiving any purchase order or contract rated hereunder shall each retain for a period of at least two years, for inspection by representatives of the War Production Board, endorsed copies of all such purchase orders or contracts, whether accepted or rejected, segregated from all other purchase orders or contracts, or filed in such manner that they can be readily segregated for such inspection.

(j) Communications to Office of Petroleum Coordinator.

All reports which may be required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed to:

"Office of Petroleum Coordinator
"Washington, D. C., Ref: P-98"

(k) Violations.

Any person who wilfully violates any provision of this Order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this Order may be prohibited from receiving further deliveries of any Material subject to allocation, and such further action may be taken as is deemed appropriate, including a recommendation for prosecution under Section 35 (a) of the Criminal Code (18 U. S. C. 80).

(l) Revocation or Amendment.

This Order may be revoked or amended at any time as to any Operator or any Supplier. In the event of revocation, deliveries already rated pursuant to the provisions of this Order shall be completed in accordance with said rating, unless the rating has been specifically revoked with respect thereto. No additional applications of the rating to any other deliveries shall thereafter be made by any Operator or Supplier affected by such revocation.

(m) Applicability of Priorities Regulation No. 1.

This Order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1, as amended from time to time, except to the extent that any provision of this Order may be inconsistent therewith, in which case the provisions of this Order shall govern.

(n) Effective Date.

This Order shall take effect on the date of issuance and shall continue in effect until May 15, 1942.
Issued this 14th day of March, 1942.

(Signed) J. S. KNOWLSON,
Director of Industry Operations.

Amended P-98

[*Continued from page 12*]

cilities is covered by an A-8 rating and an A-10 classification is provided for marketing.

Two important changes in the order deal with inventories and maintenance.

The restrictions on inventories which may be carried by an operator have been changed to provide that a minimum practicable inventory shall in no case exceed a 90-day supply. The inventory restriction in the original order was based on a percentage of the operators' inventories in 1940. The restrictions on the use of ratings assigned to supplies have been changed to allow suppliers who do not process or alter the material which they supply to accumulate the ratings served on them up to a period of three months so that they may place orders for minimum commercial quantities. Other suppliers who wish to extend the ratings served on them must do so while the orders are being filled.

Provisions dealing with maintenance, repair and operating supplies have been amended to specify that this type of supplies will not include material for the replacement of an item carried on the operator's books as a fixed asset, but the operator will be permitted to apply the proper preference rating to materials for a part of such an item if he can properly charge the cost to operating expense and not to capital account.

Thus, it was explained, if an operator wants to replace a joint in a pipe line, or a tubing and casing, and can properly charge the expense to operation and not to capital account, he can apply the preference rating which is assigned to maintenance, repair and operating supplies.

Another change provides that operators may apply A-2 ratings to chemicals used in extracting, cycling and other plants, eliminating the delay of applying for such materials on PD forms.

A general rule is incorporated that if an operator who wants a material having a high rating can obtain it through a lower rating, he must use the latter.

The method of applying the rating assigned by the order remains as before, a simple endorsement on purchase orders.

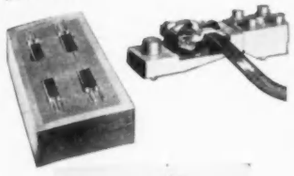
Definitions of terms used in the order have been extensively rewritten and clarified, particularly the definition of "production," and a definition of "main gas trunk line" is added, although such lines do not get priority assistance under P-98 but operate under P-46.

The new order will be effective until May 15.

New PD 82-A Forms to Apply Next Quarter

The Materials Division of OPC advised equipment manufacturers not to continue the use of present PD 82-A forms under P-83 by changing the dates for the new quarter beginning April 1. Some revision and simplification in PD 82-A is being undertaken and new forms will be issued for use during the second quarter of 1942. In the meantime some manufacturers have submitted PD 82-A forms for the second quarter, using the old forms and merely changing the dates to apply.

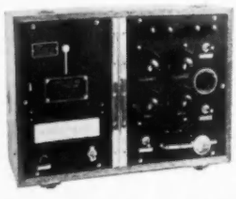
The field for the application of strain measurement is so broad and the variety of gages and auxiliary equipment available so great, that the selection of the proper instrument for the specific job is often confusing. Care is essential in making this selection for satisfactory results. Of the many types of gages and auxiliary equipment available, a few are illustrated below.



ELECTRIC STRAIN GAGES

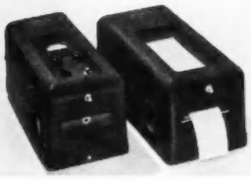
Here are three types of electric gages that are widely used to measure strains in propellers, bridges, buildings, dams, towers, and other engineering members.

Illustrated: SR-4 Bonded Metalectric, Electro-Magnetic, and Ess or Strip Gages.



B-S WHEATSTONE BRIDGE CONTROL BOX

A necessary and exceedingly accurate instrument for the measurement of static or slowly applied stresses.



AMPLIFIER AND OSCILLOGRAPH

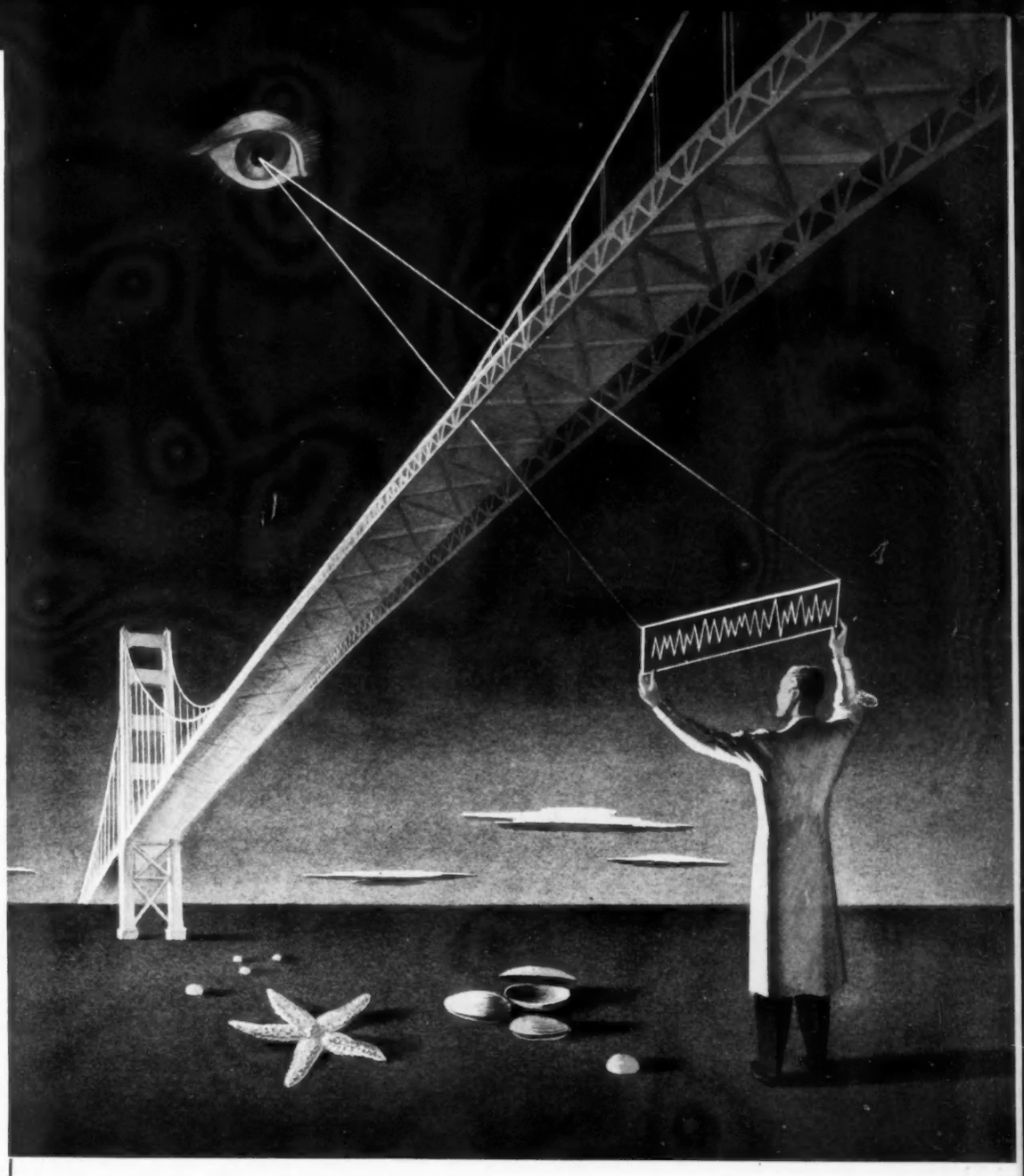
Where strains occur in short-time intervals, amplifiers are required to "step-up" or amplify the output of electric gages. The nature of the strain and type of gage govern the choice of amplifiers.

An oscillograph or recorder is necessary to obtain permanent records of strains. The Crystal pen and ink Oscillograph shown above is one of several available recorders.

Illustrations: Baldwin-Southwark; Brush Dev. Co.; General Electric; deForest.

* * *

Other testing equipment in the strain measuring group: Waugh Switching Unit to permit quick reading of several gages. Electrical Oscillator, 2000 cycles, for rapidly occurring stresses. Vibragraph for recording displacements. Bernhard Mechanical Oscillator for applying period forces.



His eye can see the strain in a girder's heart

The engineer who is properly equipped can determine the existing strain in any member of any structure. His gage may weigh less than 2 ounces . . . yet it can "look" inside the heart of bridge girder, steel rail, concrete base, or factory floor—and record graphically what it "sees."

WAUGH LABORATORIES makes available a complete line of test instruments and machines, together with an engineering field service and laboratory facilities, for analyzing strains, forces, and vibrations in and on structures.

For information regarding its service application to particular industries, write to Nereus H. Roy, Director, at the address below.

WAUGH *Laboratories*

A DIVISION OF WAUGH EQUIPMENT COMPANY • 420 LEXINGTON AVENUE, NEW YORK, N. Y.

Pacific Coast Branch: Petroleum Securities Bldg., Los Angeles, California

PRACTICAL OPERATING HINTS FOR

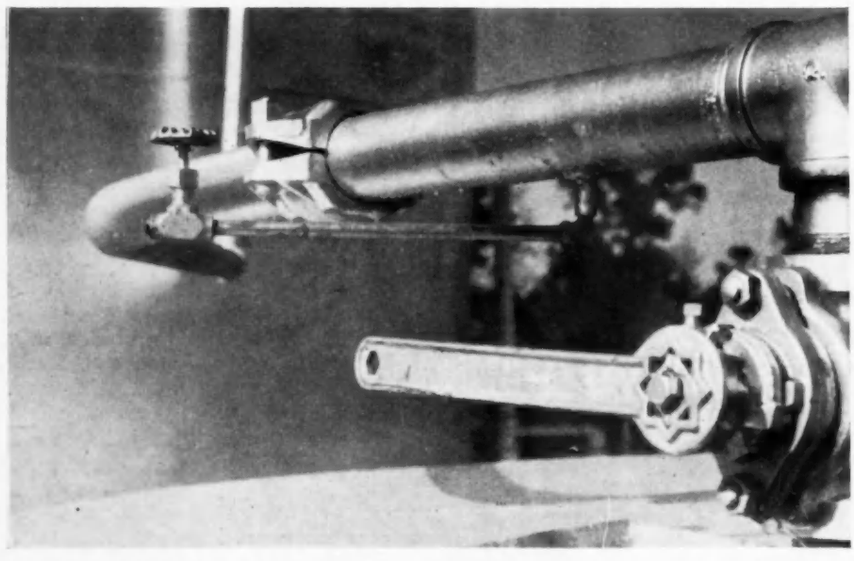
1. SAMPLING

Flow Line Tap Checks Brine Contamination

A BLEEDER placed on the overflow line emptying oil from the gunbarrel into the stock tanks permits taking samples for shake-outs, allowing determination of nature of fluid, efficiency of treating in gunbarrel, and offering means to recognize undesirable overflow of salt water from the gunbarrel into stock tanks.

In the bottom of the overflow pipe, near the first stock tank, a hole is drilled through the wall, and a ¼-inch collar welded to it. An ell is placed in the collar, and a ¼-inch nipple about 18 inches long is inserted, with a valve in its free end. The collar produces a loose fit, allowing the nipple to pivot and place the sampling end in a convenient position. By simply opening the valve, a sample is caught in a container by the pumper, and the valve is then closed to direct all fluid into the tanks as before.

The overflow pipe on which the bleeder is placed is located near the walkway for convenience in reaching the pipe. When it is swung into position, the gauger can easily take his sample; however, at other times, the bleeder is turned back into position parallel with the overflow pipe, occupying little space and offering no protrusion or hindrance to gauging tanks or work on their decks.



Collar welded into bottom of flow line from gun-barrel to stock tanks permits quick sampling of stream and close check on brine content.

Aligned with pumping jack, and driven through flexible linkage from counterweight end of beam, this pump aids in promoting smoother flow and operation.

2. PUMPING

Vacuum Maintained by Beam Driven Unit

PROVISION for maintaining vacuum on a well located just west of Centralia, Illinois, is secured by setting an axiliary jack driving a vacuum pump to the rear of the one pumping the well, and connecting the free end of the auxiliary to the counterweight end of the well unit with a flexible or swivel linkage.

The down stroke of the rod line is then cushioned by the working stroke of the vacuum pump and the weight of piston and operating beam added to counterbalancing effect on the up stroke of the rods.

This type of vacuum pump is also suitable for collecting and storing scanty gas supply for use as fuel for the pumping engine when used with production relatively gas free. *(G. W. Haynes, Sapulpa, Oklahoma.)*

3. FIRE PROTECTION

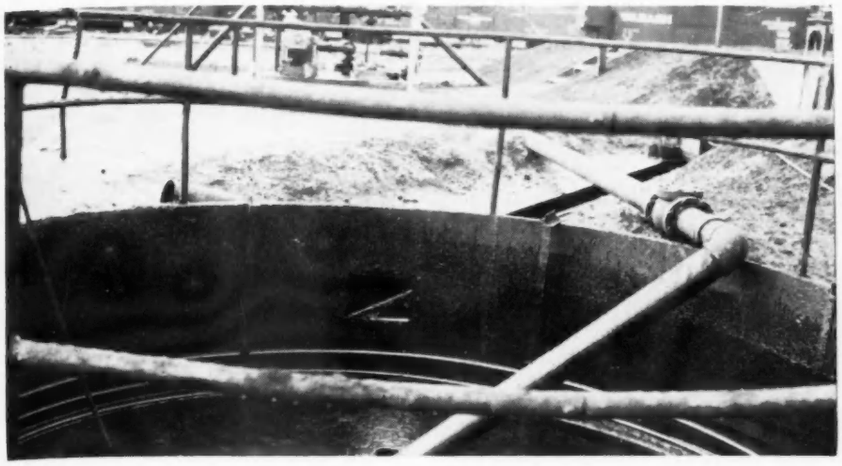
Flume and Pit Remove Waste Fluid Hazard

IN an area where accidental leakage or spilling of oil constitutes a serious fire and safety hazard, one company solved the problem of salvage by setting open steel tanks in the ground to serve as collection points for all drainage and to permit quick handling of fluids to proper storage.

Flow from tank areas is through a rectangular flume, led through fire walls and dikes and concrete lined to prevent erosion and provide means for effective blocking of fire wall apertures in case of emergency.

A sluice gate is set in the flume and normally kept closed to prevent large amounts of fluid getting away from tank or well without detection in case of well or line failure.

THE PRODUCTION MAN...



Set into the space between tanks, this waste collecting unit permits gravity segregation of oil and water, with pump transfer of each to proper disposal points.

Pumps are provided to handle water and sludge from the bottom of the tank, and to remove oil from the top as it accumulates or separates from the water below.

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

4. LEASEKEEPING

Guard Protects Gap at Road Cattleguard

Welded to guard cross members, this shield closes gap at fence line.

A CATTLE guard may be made more serviceable by erecting a shield across its ends to keep out small animals which otherwise would slip into an enclosure by walking around ends of the guard.

Such a shield may be constructed from a section of tank steel plating. Either a piece from the bottom of a tank or a curved section from one of its sides will be sufficient provided it is straightened. The steel is cut to the desired shape, with one edge square and about six feet long in order to form the base and rest firmly on the top of the cattle guard. Other sides are shorter, and are cut to make a triangle, using the long side as base and the others, about four feet long, forming a protective, angular wall for the structure. Apex of the triangle is curved to remove sharp edges and as an aid to appearance. The shield is bolted, wired or welded to the pipes in the cattle guard, and is held upright by similar connection at the post.

5. BRINE DISPOSAL

Rod-line Powers Unit for Clearing Pits

NEARLY every lease requires one or more extra pumps to circulate tank bottoms, pump out oil, pump fresh water, etc. If a rod line is running near the location where the pump is needed, a pump constructed from an ordinary working barrel can be attached to the rod line and driven thereby. The working barrel is clamped in 2-inch pipe "A" frames which are set in concrete. An ordinary plunger assembly with the valve blanked out is run on a polish rod through a stuffing box and attached to the rod line with swivel or flexible joint. A cross on one end and a tee on the other, with check valves in the proper places, complete the assembly.

Mounted adjacent to rod line, and with swivel connection to absorb angularity of offset drive, this pump unwaters sumps on this lease effectively.

PRACTICAL OPERATING HINTS FOR

1. LIGHTING

Reel for Wire Leads Speeds Rigging Up

All-steel drum accommodates all cable used to tie in rig and unit.

PROTECTION against loss or damage, as well as a convenience in rigging up or moving is provided by construction of a large reel for winding the wiring of electrical equipment when it is not in use. This reel is erected on the skid unit which also supports the generator and other electrical apparatus, furnishing a convenient means of gathering and centralizing wires when moving.

The reel is made of a 12-inch piece of large pipe, with 3/8-inch steel plate cut into disks about 24 inches in diameter and welded to its ends. Through the center of each disk, a hole, about 2½ inches in diameter is cut, and through both holes a 30-inch section of 2-inch pipe is inserted. One end of this pipe is pinned into position by means of a washer and short bolt placed into a hole which is drilled near its end. To the other end of the pipe an ell is attached, and a short joint of 2-inch pipe inserted as a supporting handle for the reel.

A vertical 2½-inch pipe is welded to a convenient location on the unit, such as the skid base, and is cut to a height approximately 3 feet tall, forming socket for the reel handle. Into this socket, provided by the welded upright, the handle is placed, holding the reel firmly at a specified height. As the socket allows a loose fit of the handle, it is free to rotate in any direction, furnishing an additional convenience in unwinding the wires to place lights in position.

In the outer edge of one disk, a 6-inch bar made of ½-inch steel is welded, to form a handle by which the reel is rotated when winding in the wires.

2. DRAWWORKS

Grille Under Drives Promotes Cleanliness

BY COVERING the upper surface of the skid on which drawworks and engine drive are mounted with a section of expanded flooring, a surface is provided on which men stand while working on the drives, and at the same time the grille permits water, oil drippings, and other leakage to fall through, avoiding overflow onto the derrick floor and consequent hazard.

The lower skid is then covered with light steel plate, forming a catch basin or sump into which all drippings fall, and which also catches nuts, cotters and other small parts dropped through the grille. This lower trap may be provided with drain at any desired corner, and cleaned as desired by mopping through the openings at the sides.

Use of the catch basin prevents the dripping of oil and water onto the ground supporting the engine foundation, permitting it to be kept drained and thus offer much better support to the unit than when constantly wet.

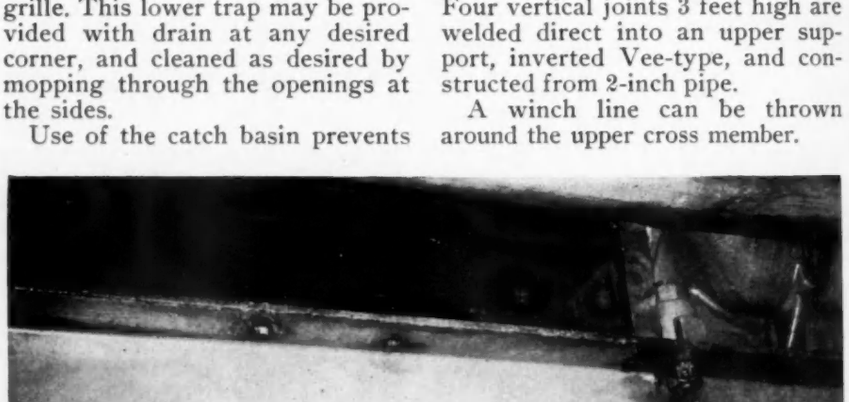
3. TRANSPORTATION

Unitized Skid Frame Permits Quick Shifts

Braced pipe frame encloses unit and affords winch line hitch.

A SPECIAL welded frame has greatly increased the mobility of this generating unit and engine operated by Olson Drilling Company. Foundation is made of four sections of 6-inch welded pipe, 6 feet in length and 3 feet in width. Four vertical joints 3 feet high are welded direct into an upper support, inverted Vee-type, and constructed from 2-inch pipe.

A winch line can be thrown around the upper cross member.



Grille at floor level and covered lower portion of skid permit drainage yet trap leakage and protect ground at foundation from softening oil and water.

THE DRILLING RIG . . .

4. PULLING PIPE

Special Hose Fixture Insures Pipe Wash

Bell-mouth fitting for nozzle and spray below floor wash down pipe.

ONE of the undesirable jobs to be done every time the drill pipe is pulled is that of washing down the pipe as it emerges above the rotary table. This operation, necessary as it is, nevertheless creates a hazard for the men working on the floor, as the mud, oil and water usually is splashed around the table and floor where men walk.

A drilling contractor in West Texas removes this danger from his rigs by providing a means of washing down the drill pipe from below the floor level. A 1½-inch hole is drilled in the floor midway between the rotary table and the water valve outlet at the side of the derrick floor. A 1¼-inch pipe then is run from this opening beneath the floor over to the drilling nipple just above the blow-out preventer rams, so that the drill pipe will receive a maximum of spray.

To the nipple projecting above the floor is secured the threaded half of a discarded 1¼-inch union. This fitting serves the dual purpose of supporting the pipe nipple at just slightly above floor level, as well as facilitating insertion of the water hose into the bell-shaped throat of the fitting.

One of the advantages of this type of set-up is that the water hose is instantly available at all times for any other purpose whether pipe is being pulled or not.

5. CLEANING

Chemical Mixer Aids in Clean-up Chore

CLEANING up the drawworks, pumps, heavy tools and other equipment following completion of a well is greatly simplified by a California company through the use of a small portable steam cleaning unit made of used and salvaged equipment.

An ordinary 55-gallon drum was fitted with a steel cover on which were mounted steam and water fittings, the latter being arranged so that cleaning agent solution in the barrel is drawn out by, and mixed with, the steam as it passes out toward the steam nozzle. An opening was left in the top of the barrel through which dry chemicals can be dumped, and then mixed with the water by rolling with a small jet of steam piped down into the barrel.

While the photograph shows the assembly in the dismantled condition, with the rubber steam hose that normally ties in between the barrel fittings and the nozzle not shown, it shows the type of hand nozzle used, and the ½-inch pipe rack welded to the side of the barrel on which the hose may be coiled when not in use.

A handhold welded to each side of the barrel permits easy handling and moving of the unit by the men doing the cleaning.

Oil drum fitted with steam line for handling fluids into and out of mixing chamber, as well as for heating and stirring, saves chemicals and betters cleaning.

Break the *Scrap* Deadlock Now!

No Time to Wait for Surveys . . .
Definite Action Needed in All Oil States

By ELTON STERRETT
Equipment Editor

ONLY one oil-producing state has so far rounded up any appreciable quantity of scrap. Others, following Texas' lead, are getting ready to begin to collect scrap. There is not time to get ready. Scrap collection is imperative today if the steel mills are to supply the nation's needs for the war effort.

Of all the big industries not producing scrap as a manufacturing by-product, the oil industry has on hand and available the greatest backlog of iron and steel scrap. It also has the man power, and the transportation equipment to bring lease, yard and refinery scrap to the nearest shipping or buying point with minimum loss of time.

Scrap is available, in tonnage sufficient to halt the daily recording of more furnaces off heat, if the material is collected. Herein lies the trouble, the delay. Some organization or authority must assume charge and, without the usual democratic appointing of committees, making of surveys and planning of eventual drives, must start oil-field scrap flowing toward the mills at once.

The next three months are most vital. Not only is the war-effort demand for steel mounting daily, and seeing a steady reduction in number of operating furnaces, but along with it an inevitable decrease in scrap from normal sources, due to the time element in the change-over of manufacturing from peace time products to war materials.

California, Illinois, Indiana, Kansas, Kentucky, Louisiana, Michigan, New York, Oklahoma, Pennsylvania, the Mountain States, all are reservoirs of untapped scrap. Even Texas, despite the fine showing made in its scrap collection so far, still has vast stores of oil-field scrap which have not been touched. These stores of scrap, collected and forwarded to the mills, can most effectively help fill the need until the revamped industries are again putting back into steel-making channels volumes obtainable from them on earlier manufacturing schedules.

Now, while production schedules are being revised to fit new transportation limitations, the oil industry can best utilize its time, its man power, in an effort to clean up *all* scrap iron and steel. Some states, now inaugurating scrap and salvage drives, find that oil companies within their borders have already begun to move their scrap. *They* do not need ponderous committees to urge them on, no flag-waving is necessary, only, for those not already active, must methods be outlined and collection points designated. Texas' drive got results within 14 days of the first letter from the general chairman to his county chairmen; it is still bringing in vast tonnages of scrap, and will continue to do so.

A well-directed and immediate program within the oil industry will set up machinery for scrap collection which can also function for industrial, agricultural and even domestic scrap handling, and will put scrap into mill bins long before any other like source can begin to function.

It is up to the oil industry to get in the scrap, *now*, to keep our nation in the scrap until slower, less organized industries can catch the count and get in step for a truly *all-out* drive.

28,000 Long Tons of Texas Scrap Reported from Oil Industry

ALREADY 28,000 long tons of iron and steel scrap have been collected as a result of the Texas Mid-Continent Oil and Gas Association's scrap program, Charles F. Roeser of Fort Worth, general chairman, reported Saturday.

Figures from 36 principal loading points showed 492 carloads of scrap already shipped to eastern mills and Texas foundries, representing 17,223 long tons. On hand at these same centers were 286 carloads or 10,010 long tons more awaiting shipment and to be moved out at once. The total is 778 carloads or 27,233 gross tons.

"This is not all the scrap so far collected," Roeser explained. "It represents reports from only half of our collection centers. Doubtless when the others report, the total will top 800 carloads or 30,000 long tons."

Efforts of chairmen and co-chairmen and committeemen are not at an end, he made clear. "These figures are largely from our intensive collection drive," he said. "Our committees are very much on the job, and scrap is still moving into virtually all collection centers. We are in the scrap business for the duration of the emergency, and there will be a steady if smaller stream of scrap for as long as it is needed."

The importance of "getting in the scrap now" was pointed out by Roeser.

"Some of the mills rely largely upon scrap from large industries, like the automobile business, which are now shut down for change over

Texas Mid-Continent Oil & Gas Association Scrap Collection Campaign

(Report March 17 for 36 centers)

CENTER	Carloads Shipped	Carloads on Hand*	Total Carloads
Beaumont	30	13	43
Houston	54	34	88
Port Arthur	19	5	24
Lake Charles	9	5	14
El Paso	14	8	22
San Antonio	15	7	22
Borger-Pampa	22	19	41
Wichita Falls	14	8	22
Vernon	22	12	34
Wellington	6	3	9
Galveston	5	4	9
Eastland	18	10	28
Coleman	8	5	13
Lubbock	7	3	10
Gladewater	8	4	12
Longview	15	13	28
Kilgore	15	7	22
Greggton	9	4	13
Overton	8	7	15
Paris	7	2	9
Palestine	5	5	10
Henderson	3	3	6
Denison	2	2	4
Brady	18	9	27
Odessa	25	8	33
McCamey	15	7	22
Abilene	30	20	50
Stamford	10	8	18
Munday	2	1	3
Rule	2	1	3
Rotan	5	4	9
Winters	2	2	4
Colorado City	8	4	12
Austin	18	15	33
Corpus Christi	10	7	17
Fort Worth	32	17	49
Total Carloads	492	286	778
Total Tons	17,223	10,010	27,233

* More still coming in in most areas.

to war production," the chairman explained. "These mills are thus cut off from their normal supply of scrap and will be until war production in these plants opens up sufficiently to start scrap from this source moving to them.

"In the meantime, it is imperative that other sources of supply, such as our Texas Mid-Continent campaign, be found to keep these mills in operation. Thus a little scrap from each of us now is of much more importance than more scrap would be later. In fact, it is the only way we can keep some of the mills running. It is up to us to do it."

Praise for the work of the county chairmen and co-chairmen and committeemen in the Texas campaign was expressed by Roeser. "The gratifying results of our drive are due largely to the fine cooperation of these men," he said. "They have put time and effort into the campaign which could not be counted in dollars. The entire industry is proud of them."

Oklahoma Rolls Up Its Sleeves To "Get in the Scrap"

OKLAHOMA'S 81-man Salvage for Victory committee, E. H. Moore, Tulsa, chairman, has already begun the publicity and organization planned at the initial meeting on March 16.

Naming the period between April 8 and 18 as official campaign, every effort is being directed toward a substantial flow of scrap to the mills in advance of that date. Aiding in determining what shall be scrapped and what salvaged, as well as bringing the vital need of scrap to every industry and every community within the state, a four-page announcement has been mailed out by Levi Ackley, executive secretary for the Oklahoma General Salvage Section, Bureau of Industrial Conservation, WPB.

The announcement stresses the need for moving scrap through usual trade channels to the nearest scrap dealer, and emphasizes that the government is not asking for scrap metal donations, having no facilities for handling such gifts — and suggesting that small amounts of scrap be pooled until sufficient quantity has been accumulated to make it economic to move it.

In order to permit industries and individuals not familiar with scrap handling to make immediate contact with persons qualified to forward their scrap, the bulletin carries a list of some 120 principal scrap and salvage dealers within the state.

Further to expedite scrap collection, the bulletin lists the membership of the committee, with home address of each, to enable persons or industries to contact the committeemen for aid in solving scrap problems.

PANHANDLE "GETS IN THE SCRAP"

The Hutchinson County, Texas, Scrap committee, Walter David, Chairman, at the dock where some of the 22 cars of scrap already forwarded from the district were loaded. The use of a ramp for handling scrap when overhead or magnet crane facilities are not available shows how heavy scrap could be unloaded from trucks, backed into the freight car, and racked against scrap already placed there.

New Mexico Scrap Now Pouring In

A TOTAL of 725 tons of scrap had been collected in two of the four principal New Mexico collection centers as the week ended, Hugh L. Sawyers of Roswell, secretary of the New Mexico Oil and Gas Association reported. The New

Mexico group is cooperating with the Texas Mid-Continent Oil and Gas Association in the scrap collection program.

Lea County with Tom Mason of Hobbs as chairman, had collected 500 tons of scrap, while Eddy County with Tom Sivley of Artesia in charge had brought in 225 tons. All this was shipped out as collected, with more scrap still coming in. Reports had not been received from San Juan and McKinley Counties, the other two counties where the collection campaign is under way.

"The New Mexico drive is meeting with a very fine response, not only from the oil operators but also from the farmers," Sawyers reported. "The farmers are cooperating to get in their scrap, too, which is helping to swell our total. I have never found a more whole-hearted response than is being given our scrap program."

Fine cooperation also is being given by New Mexico newspapers in handling news on the local collections, Sawyers said.

"Much more scrap should be collected in the next week or 10 days of our intensive drive," the association officer said. "However, we will stay on the job as long as is necessary to 'get in the scrap.'"

The oil industry scrap collection is not the place to dispose of the heaps of tin cans often surreptitiously deposited on out-of-the-way leases by thoughtless city dwellers. Presence of tin cans in the collected scrap even though rusted until no shiny metal is visible, cuts the value of the lot by as much as 50 percent. Galvanized or terne plate roofing likewise should be segregated from other scrap, and disposed of by arrangement with the scrap dealer—usually being taken at a price which will probably barely clear handling expenses.

EXAMPLE OF ONE COMPANY'S SCRAP COLLECTION

There was scrap on those leases, material urgently needed to enable steel mills to operate at capacity, as is evidenced by this heap, representing a small part of one county's contribution to Texas initial week of scrap roundup. Not only has the lease scrap contributed, but also the trash pile back of each pumper's lot, old stoves, iron beds, auto rims and like material being as useful for steel-making as the heavier pipe, flanges and valve bodies. Cast iron in this pile may again function as oil country castings, due to efforts exerted in roundup.

April Crude Oil Allowables Cut Far Below Demand; Natural Gasoline Included

Adoption of a new system of setting production rates for the several states was disclosed by OPC March 19 with issuance of recommendations for April.

Brought under the recommendations were condensate and natural gas derivatives, accounting for approximately five percent of the industry's total production.

"We are broadening the certification procedure," Coordinator Ickes explained, "for the simple reason that the urgencies of the war situation no longer permit the ignoring of what amounts to a substantial portion of the total United States production of petroleum liquids.

"Approximately five percent of total production is made up of condensate and natural gas derivatives. Obviously, inequities cannot help but arise if the recommended rates do not also take into account the production requirements for these other petroleum liquids."

Despite extension of the allowables to provide for these products, the OPC recommendation for April production was but 3,656,800 barrels a day, a cut of 340,000 barrels from the original recommendation for March and admittedly 73,200 barrels under the national demand of 3,730,000 barrels forecast by the Bureau of Mines.

With the allowance for condensate and natural gas derivatives, the daily average crude production recommended for April is approximately 3,474,000 barrels, but OPC officials explained that they had not broken the estimates down but would leave it to the several states to determine how their allowable production should be divided among the various products.

Explaining the formula which might be followed to calculate the recommended production rate for a particular state, OPC took California as an example. That state has a certified production rate for crude only this month of 627,000 barrels a day, and if only crude had been figured for April it would have a quota of 623,000 barrels for next month; but under the new system, the allowance for production of natural gas derivaties makes the California total daily 659,800 barrels.

Gulf States Get Sharp Cuts

Ickes pointed out that the April figures reflect sharp cuts in the production rates for the Gulf Coast states.

"The situation which we warned against last summer has now come to pass," he said. "In other words, we have reached the point where the pressing demand for petroleum and petroleum products in the Eastern consuming centers cannot be entirely satisfied because of the lack of adequate transportation.

"The important producing areas of the Gulf Coast are unable to meet that continuing demand because their outlets are war-obstructed. The effect of this obstructed outlet is apparent in the difference between the national demand for 3,730,000 barrels of crude oil daily, as forecast by the Bureau of Mines for the month of April, and the actual available outlet for only 3,656,800 barrels of all petroleum liquids for the same month.

"Such a situation inevitably must result in hardships for both districts; to the East Coast, where restrictions must be imposed because the oil can not be delivered; and to the producers of the Gulf, who will be unable to market the products they otherwise would if sufficient tanker transportation were available."

Cuts in allowables for four of the five District 3 states amounted to more than the net reduction from March. In that district only Arkansas was given an increase, while in the other four districts only New York, Illinois, and Nebraska were called upon for reductions.

April Allocations

April allocations provide for a total daily output of 79,700 barrels for District 1, compared with 72,300 barrels for March; 1,141,000 barrels for District 2 compared with 1,107,400 barrels; 1,656,800 barrels for District 3 compared with an original allocation of 2,082,200 barrels and a revised output (ordered March 5) of 1,878,100 barrels; 119,500 barrels for District 4 compared with 107,900 barrels, and 659,800 barrels for District 5 compared with 627,000 barrels.

Recommendations for the several states for April production of all petroleum liquids, compared with the March recommendations for crude only were as follows:

	April	March	
District 1:			
New York	14,600	14,500	
Pennsylvania	49,900	48,200	
W. Virginia	15,200	9,600	
District 2:			
Illinois	354,400	362,500	
Indiana	18,200	18,000	
Kansas	253,400	245,800	
Kentucky	12,800	12,000	
Michigan	50,200	49,500	
Nebraska	5,000	5,100	
Ohio	10,100	9,200	
Oklahoma	436,900	405,300	
District 3:			
Arkansas	74,000	71,500*	71,500†
Louisiana	313,000	314,700*	330,000†
Mississippi	49,800	53,100*	55,600†
New Mexico	86,000	100,200*	114,500†
Texas	1,134,000	1,338,600*	1,510,600†
District 4:			
Colorado	6,900	6,400	
Montana	23,700	21,000	
Wyoming	88,900	80,500	
District 5:			
California	659,800	627,000	

* Revised allocation.
† Original allocation.

Texas Monthly Hearing Gives Little Information

The Texas Railroad Commission monthly proration hearing at Austin March 16 developed little information. Most of the discussion involved the interpretation of nominations which totaled 1,641,096 barrels daily for April. This is a decrease of 204,075 barrels from March nominations, but commission felt that it did not give an accurate picture of demand.

Subsequently on Tuesday, the commission received from OPC an estimated demand of 1,134,000 barrels daily, including crude oil, condensate and natural gasoline. The latter production will probably take up 30,000 to 35,000 of the total.

The new figure was a reduction of 204,600 barrels from March when OPC had estimated 1,338,600 barrels. Thus, in the course of two months, the demand for Texas crude oil has dropped 300,000 barrels or nearly one fourth.

During the hearing it became apparent that not only the demand figure, but much of the allocation, was developed in Washington. Commissioner Olin Culberson said fields producing aviation grade crude would be recognized if an analysis was furnished from the Bureau of Mines. In addition to this it would be necessary to show that the oil was being used for aviation gasoline to assist in the war effort.

Phillips Petroleum Company complained that the Panhandle should have been classified as an aviation-gasoline producer and therefore exempt from the four shutdown days added recently. In addition to this, much of the oil is going to production of synthetic rubber. Other purchasers in the Panhandle indicated that they desired to buy the oil which they had nominated.

A new plan for assigning new field allowables was offered by Henderson

News Index

General:
Associations 46
Washington 9

Markets-Statistics 48

Men in the News 60

United States Field Operations:
Alabama 58
Arkansas 57
California 58
East Texas 54
Eastern States 59
Illinois 51
Indiana 52
Kansas 52
Kentucky 52
Louisiana Coast 56
Louisiana, North 57
Michigan 58
Mississippi 57
Missouri 52
Nebraska 53
New Mexico 53
New York 59
North Texas 54
Ohio 59
Oklahoma 52
Pennsylvania 59
Southwest Texas 55
Texas Gulf Coast 56
Texas Panhandle 53
West Texas 53
West Central Texas 54
West Virginia 59

OIL IS AMMUNITION ★ KEEP 'EM PRODUCING

Coquat, representing several operators in Southwest Texas. He asked that the allowances be reduced 40 percent, but that the life of the producing period be extended to one year instead of six months and that it apply to the first 10 wells in the field rather than the first 5. He thought this would result in less injury to the fields by reducing the rate of flow per well and that it would give a firmer market over a longer period.

Pressures in the East Texas field dropped only 1.86 pounds during February, according to Dr. F. V. L. Patten, director of production for the commission. This was in sharp contrast to the 15-pound drop reported for the month preceding, but followed the normal tendency of pressure decline. That is, the drop has invariably continued at a reduced rate the month after a sharp decline was reported.

Operators were also concerned about the method to be used in determining which well was first spudded in a field after December 23. Under the provisions of M-68, this well will determine the pattern of drilling in the field thereafter. A. E. Willig, representing The Texas Company, asked that the commission require a report from all operators, giving the spudding dates on their wells. The commission seemed to be reluctant to interfere in a federal ruling. W. J. Murray, Jr., engineer for OPC thought federal authorities should make this determination and said he had not been able to get an official interpretation of the order from WPB.

California Allocations Based on Gravity Scale

During April allocation of production to the Wilmington field will be made on a gravity basis, the District 5 production committee has advised operators in that field. Allocation on a gravity basis will be instituted at Wilmington in order to increase the yield of fuel oil and operators in the area have been asked to suggest methods of solving any problems which may be created by the gravity adjustments to be made.

Heavy withdrawals have been made from residual fuel oil supplies so far this year, data compiled by the Coordinator's Los Angeles office indicates. In the period from January 1 to March 7, 1942, fuel oil inventories have been reduced 3,400,000 barrels in California, while gasoline supplies in the same period increased 911,000 barrels.

Wilmington is one of the most complicated fields in the country from a geological standpoint, being broken up into several producing zones, some of which produce heavy oil and some light oil. E. E. Pyles, chairman of the District 5 Production Committee, has suggested shutting-in of the field's Ford zone, which produces high-gravity oil. Other fields in the state producing high-gravity oil may also be asked to shutin, it was indicated.

Wilmington operators have also been asked to furnish data on the ability of the field to produce over a sustained period. This data will be developed in accordance with the method used to measure the state's over-all producing capacity.

Final Plans Made for Gas Measurement Short Course

Final plans for the eighteenth Southwestern Gas Measurement Short Course at the University of Oklahoma, Norman, April 21, 22 and 23, were completed at a recent meeting of the general committee in Tulsa. This meeting was called for the purpose of considering the final draft of the program.

Morning of the meeting will be devoted to discussion of general subjects. The afternoons have been set aside for classes covering a wide variety of subjects related to gas measurement.

Among those who will speak before the general assembly are Burt R. Bay, president of Northern Natural Gas Company and Judge Reford Bond, chairman of the Oklahoma Corporation Commission. The morning of the last day has been set aside for the discussion of the fundamental principles involved in all phases of gas metering and regulating practices.

Those attending the general committee meeting of the Southwestern Gas Measurement Short Course were: Seated, left to right: E. L. Stark, The Foxboro Company, Dallas; Earl Kightlinger, Arkansas-Louisiana Gas Company, Shreveport; J. H. Page, Kansas Corporation Commission, Wichita; Max K. Watson, Canadian River Gas Company, Amarillo; G. W. McCullough, Phillips Petroleum Company, Bartlesville, chairman; W. H. Carson, University of Oklahoma, Norman; Kate A. Niblack, Oklahoma Utilities Corporation, Oklahoma City; E. G. McAninch, Oklahoma Natural Gas Company, Tulsa; R. M. Scofield, Lone Star Gas Company, Dallas. Standing, left to right: R. L. Rountree, United Gas Pipe Line Company, Shreveport; J. L. Griffin, Northern Natural Gas Company, Omaha; W. R. McLaughlin, Pittsburgh Equitable Meter Company, Dallas; William F. Lowe, Natural Gasoline Association of America, Tulsa; L. G. Rheinberger, Sinclair Prairie Oil Company, Tulsa.

Compact to Get Reserves Report at Little Rock

A picture of the dependability of United States petroleum resources, drawn by a committee of technical experts from 11 oil states, and the welcoming of a new member state, Kentucky, will highlight the spring meeting of the Interstate Oil Compact Commission, March 27-28 in Little Rock, Arkansas.

Formal notices of the meeting are being mailed today to member states by Charles Orr, Oklahoma City, secretary.

The commission's research and coordinating committee will meet at 1 p.m. March 27 in the Albert Pike Hotel, meeting headquarters, to complete its survey of petroleum reserves of the individual states, and will report at the general session the next day. The committee is composed of a conservation technician from each compact-member state.

N. W. Shiarella

In the audience, when the research committee reports, will be members of the National Conference of Petroleum Regulatory Authorities, especially invited to this meeting, and possibly Harold L. Ickes, federal petroleum coordinator, who has been invited to attend the meeting as principal speaker or send a representative.

N. W. Shiarella, Owensboro, has accepted appointment as Kentucky representative to the Interstate Oil Compact Commission, Governor Keen Johnson of Kentucky has informed the commission chairman.

When the commission convenes in Little Rock, Kentucky will take its first official part in commission activities. Sometime before then Governor Johnson will sign the compact and Kentucky will become the twelfth compact state. A resolution authorizing membership received approval two weeks ago.

Shiarella is an oil producer and president of the Kentucky Oil and Gas Association.

Governor Leon C. Phillips of Okla-

homa, compact chairman, is expecting an unusually large attendance at the general session March 28, especially by operators of Arkansas, Louisiana, Mississippi, Kentucky and Tennessee, since a quarterly meeting seldom is held so close to them.

The general session opens at 10 a. m., Saturday, March 28. Friday will be devoted to committee meetings and informal conferences.

Governor Homer M. Adkins of Akkansas will open the general session. Orr and J. H. Alphin, Arkansas' compact representative, are working out the remainder of the program.

Alphin will be dinner host Friday evening to visiting governors, their representatives and state officials. The same evening members of the commission's engineering and research committees will be dinner guests of the Arkansas Oil and Gas Commission.

Dutch Didn't Leave Much Oil to Japs in Indies

Eighty-eight percent of the oil facilities in the Dutch East Indies was destroyed by Dutch forces prior to invasion of the territories by the Japanese, according to a statement made in London by J. B. A. Kessler, official of the Royal Dutch Petroleum Company. Kessler added that destruction of oil field properties, pipe lines, terminals and refineries was more thorough than that which occurred in Rumania in the previous war, and declared that at that time it took about two years for the Germans to restore productive wells to operation. Kessler remarked that the Japanese are not experienced in the handling of oil equipment and probably will be seriously handicapped in their efforts at restoration.

Canada Adopts Coupons In Gasoline Rationing

After a year of experimentation with "voluntary" methods of gasoline curtailment, Canada is about to put into operation a full-fledged rationing system based on ration cards April 1. The amount of gasoline to be delivered is fixed from time to time by the government and depends both on the type of car and the purpose for which consumers need gasoline.

Whenever gasoline is bought, coupons representing the amount are to be removed by the filling station operator. Twice a month the operator sends the collected coupons to his bulk station, and the bulk station may deliver gasoline to a filling station only equal in quantity to the volume of gasoline represented by the coupons. Twice a month the bulk station sends the coupons to the Oil Controller. Other information relating to deliveries from the bulk station is filed monthly with the controller. The purpose of this complex system is to prevent evasions of the rationing rules, infractions of which may be severely punished.

The quantity of gasoline allowed consumers is highly flexible and is fixed from time to time by the government by varying the number of gallons represented by one "unit" in the coupon books. Consumers are given so many units per year depending on the type of their cars and the nature of their occupations.

The Texas Company Plans Extending War Production

W. S. S. Rodgers, president of The Texas Company, says the company anticipates manufacture of raw materials used in production of synthetic rubber, chiefly butadiene. As a further contribution to manufacture of essential war materials from petroleum the company is building additional capacity in its refineries to make alkylate for use in 100-octane aviation gasoline, and is increasing its capacity to manufacture lubricants.

Barges

[*Continued from page 16*]

In 1941, oil shipments up the Mississippi River system from Louisiana and Texas Gulf Coast points were more than one third larger than those of 1940, in reflection of the East Coast shortage. However, the movement still was not of great relative significance, shipments to all points in 14 interior states having averaged only about 44,000 barrels daily. If that whole volume had gone to Pittsburgh, it would have supplied the East Coast district only about to the extent that the Eastern region is supplied normally by 9 ocean-going tankers. If the 44,000 barrels per day had reached Pittsburgh, the Middle Atlantic states would have received at that point only 5 percent of their petroleum requirements, and the movement would have been equivalent to only 10 percent of the recent record-breaking railway tank-car shipments of 435,000 barrels daily to the Atlantic seaboard.

Actually, less than 10 percent of the Mississippi River oil shipments of 1941 went as far north as Pennsylvania, West Virginia, and New York, although more than 90 percent went beyond Memphis. In the first 9 months of 1941, shipments from the Texas-Louisiana Gulf Coast up the Mississippi River, to points of destination, by states, were as follows:

State of Destination	Daily Average Shipments (Barrels)
New York	33
Pennsylvania	2,224
West Virginia	1,201
Ohio	1,222
Kentucky	10,484
Indiana	1,561
Tennessee	14,633
Minnesota	1,861
Iowa	123
Illinois	4,302
Missouri	1,903
Mississippi	3,356
Arkansas	1,846
Alabama	77
Total	44,826

Of those shipments approximately 75 percent originated in Louisiana and 25 percent in Texas, some Texas oils having moved into all the listed states except Arkansas and Iowa.

The shipments were principally gasoline, that product having constituted 84 percent of the total.

Present Waterway Facilities . .

An accompanying map shows the nation's principal waterways. In addition to the Mississippi River and Great Lakes systems and the intracoastal canal westward from New Orleans and Baton Rouge to Corpus Christi, Texas, there is the canal system extending eastward from New Orleans to Florida, with an extension to Birmingham, and also the Atlantic Intracoastal Waterway extending up the East Coast. The Gulf Coast canal system extends from Apalachicola, Florida, to Corpus Christi, Texas, with a controlling channel depth of 9 feet; and it will extend eventually to the Rio Grande River at Brownsville, Texas. The Atlantic Intracoastal Waterway provides a 12-foot channel from Boston to the St. Johns River in Florida, with exception of a section in New Jersey, and an 8-foot channel from the St. Johns River to Miami.

It is pointed out that these waterways are highly essential in the industrial phases of the war program, facilitating shipment of steel to war industries of the Middle West and Southwest, making possible water movement of Texas sulphur to war industries at Buffalo, via the Mississippi, the Illinois Waterway, and the Great Lakes, and providing export market for Canadian wheat that moves down the Mississippi River system to the Gulf Coast. The inland waterways not only are essential for commercial and recreational vessels but also are of military importance; for if the necessity arose, they would provide a sheltered channel for the movement of shallow-draft naval vessels, including destroyers, between the various bases on the Atlantic and the Gulf of Mexico. It is asserted, however, that the full effectiveness of the Atlantic and Gulf intracoastal waterway system cannot be attained until missing sections in New Jersey and Florida are provided. (A canal or a pipe line across northern Florida would be desirable at present it is pointed out: for eliminating the tanker haul around the Florida peninsula and thereby reducing the submarine hazard.)

Markets Weak in Southwest; Higher Prices Loom in East Account of Transportation

Extraordinary measures for accelerating overland transportation have been effective in minimizing the oil shortage on the East Coast, although demands are not being fully met, with the result that definite plans for rationing have been made.

The inability to move oils normally into that large consuming region continues to restrict markets in the supplying districts of the Southwest; and there has been further tightening of pipe-line proration in West Texas and New Mexico, which areas are at a geographical disadvantage that precludes their participation in rail shipments to the East.

Refinery runs were further curtailed on the East Coast in the week ended March 14, in reflection of difficulty of obtaining crude, and gasoline production decreased, with the result that there was another contra-seasonal withdrawal of gasoline from storage, while a comparatively large quantity of residual fuel oil also had to be taken from storage, along with a normal amount of heating oil. East Coast plants processed 42,000 barrels a day less of crude than in the previous week and operated at only 70 percent of capacity. They turned out 10,000 barrels a day less of gasoline than in the preceding week. Gasoline came from storage at the rate of 52,000 barrels daily, residual fuel oil at the rate of 98,000 daily, and light fuel oil at the rate of 6000 daily.

Despite the curtailment of crude runs on the East Coast, refinery throughput for the country as a whole was 58,000 barrels a day higher than in the previous week at 3,588,000 daily, although only 42,000 above the 3,546,000-barrel rate a year earlier. Plant runs were up 39,000 barrels daily on the Texas Gulf Coast, 24,000 on the Louisiana Gulf Coast, 15,000 in the Middle West, 6000 in California, and small amounts in other districts except Inland Texas.

The increased runs on the Texas and Louisiana Gulf Coasts resulted in larger production of gasoline and running of that product to storage but failed to fulfill increased current demands for both light and heavy fuel oils, both of which were taken from storage in large volume. In both Gulf Coast districts together, there was a draft of 50,000 barrels daily from light fuel oil stocks and one of 105,000 barrels daily from residual fuel oil storage. Gasoline went to storage in the two areas at the rate of 105,000 barrels daily. In the Middle West, the experience was similar to that on the Gulf Coast, light and heavy fuel oil having been taken from storage despite increased refinery runs that entailed larger gasoline production and running of gasoline to storage. In Oklahoma and Kansas, stocks of gasoline as well as light and heavy fuel oils were lowered, despite a slight increase in refinery runs.

The week's statistics further emphasized the seriousness of the deficiency of heavy fuel oil, withdrawals of that product from storage having been made in all districts of the country except the Appalachian and Inland Texas. For the country as a whole, there was a draft of 2,042,000 barrels, of which one third occurred on the Texas Gulf Coast, one third on the East Coast, and a large part of the remainder in California. The 68,000 barrel daily draft on heavy fuel oil storage in California occurred in the face of a slight increase in refinery runs and a further reduction in the cut of gasoline at refineries in favor of larger fuel oil yield, as reflected in a decline in gasoline production, which caused, incidentally, a 41,000-barrel per day withdrawal of gasoline from storage. Light fuel oil went to storage in California.

In reflection of larger crude runs to stills, gasoline production was increased in the week of March 14 in the Middle West, Texas Gulf Coast, Louisiana Gulf Coast and North Louisiana-Arkansas, and the increases in those areas outweighed reductions in output in other districts. Gasoline went to storage in all districts except the East Coast, the Appalachian states, Oklahoma-Kansas, and California, and stocks of the nation increased 561,000 barrels (80,000 daily), to a new all-time peak of 107,229,000 barrels, which was more than 9,000,000 barrels (9.4 percent) above the 98,014,000 barrels on hand at the middle of March last year.

Light fuel oil stocks of the United States continue approximately at the year-ago level, and the national inventory of heavy fuel oil is almost 10,000,000 barrels (10 percent) under a year ago, at 85,489,000 barrels.

The oil movement to the East Coast district in railway tank cars apparently is nearing the highest level possible. But the volume will be fairly well maintained due to the movement to shorten the rail haul as much as possible through the use of pipe lines.

The rail movement from Texas refining centers is surprisingly large, with virtually all major companies moving gasoline, fuel oil, and burning oil. One company is moving 18,000 barrels daily of various products from a coastal Texas plant. The industry committee handling the transportation problem in District 3 has made arrangements for the moving of more crude by pipe line northward out of Texas, and may achieve further increase of movement through scheduled consultation with similar committees of the Middle Western and Eastern districts.

Pipe line proration was tightened the past week by two large purchasers in West Texas and Southeastern New Mexico. Sinclair Prairie Oil Marketing Company cut back from 65 to 50 percent of the daily allowable effective March 17. The company is the largest buyer in Eddy County, New Mexico, and its runs are handled by The Texas-New Mexico Pipe Line Company, an affiliated unit. Cities Service Oil Company and Tide Water Associated Oil Company, with combined runs of 3600 bbls daily in this sour oil district, continue to accept 65 percent of the daily allowable, while The Texas Company, largest interest owner in the above carrier, has restricted its runs to 50 percent since March 3.

Atlantic Refining Company restricted its runs to 23 percent of the allowable effective March 13. This company was the first to apply pipe line proration, having cut to 77½ percent February 10, and an additional 27½ percent reduction on March 1 lowered its acceptances to 43.8 percent of the allowable. The company is contracted to take 5000 bbls daily from Sid Richardson et al in the Slaughter field and an equal volume daily from American Liberty Oil Company et al in the Wasson field. These

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	[1, 6]OPC Allocation in March	PRODUCTION IN WEEK ENDED Mar. 14	Mar. 21
Arkansas	[2]71,500	69,950	70,550
California	[3]627,000	642,900	628,800
Long Beach	.....	36,800	36,400
Midway-Sunset	.....	58,900	52,700
Kettleman Hills	.....	25,400	23,700
Wilmington	.....	88,400	89,800
Rest of State	.....	433,400	426,200
Colorado	6,400	5,550	6,000
Illinois	362,500	323,150	321,750
Salem	.....	49,850	49,600
Louden	.....	55,700	52,400
Other New Pools	.....	205,500	207,550
Old Pools	.....	12,100	12,200
Indiana	18,000	21,000	17,200
Kansas	[2]245,800	234,400	228,750
Kentucky	12,000	12,350	12,400
Louisiana	[4]314,700	334,300	333,200
North	.....	81,250	80,700
South	.....	253,050	252,500
Michigan	[2]49,500	48,650	50,950
Mississippi	53,100	90,650	90,700
Missouri	.....	125	130
Montana	21,000	21,450	21,450
Nebraska	5,100	4,100	4,050
New Mexico	[2]100,200	93,350	93,300
New York	14,500	12,800	13,100
Ohio	9,200	9,700	9,800
Oklahoma	[2]405,300	396,250	390,350
Oklahoma City	.....	75,500	74,850
Seminole Area	.....	104,250	101,950
Rest of State	.....	218,500	213,550
Pennsylvania	48,200	47,850	51,800
Tennessee	.....	30	30
Texas	[5]1,338,600	1,042,700	1,214,400
Upper Gulf Coast	.....	218,250	248,900
East Texas Field	.....	219,900	292,800
Rest of Eastern Texas	.....	79,150	84,400
Lower Gulf Coast	.....	88,750	96,850
Southwest Texas	.....	54,850	59,050
South Central Texas	.....	19,400	18,300
West Texas	.....	146,800	181,700
North Texas	.....	139,550	148,500
Panhandle	.....	76,050	83,900
Utah	.....	15	15
West Virginia	9,600	9,450	10,800
Wyoming	80,500	85,300	92,750
Total United States	3,792,700	3,506,020	3,662,275

[1] Production rates recommended for states by Office of Petroleum Coordinator, on Basis of Bureau of Mines forecast of the nation's daily average requirements for domestic crude during month.

[2] OPC allocation adopted by state conservation authorities as allowable production.

[3] OPC allocation also represents allowable production, the state quota being distributed among fields by Conservation Committee of California Oil Producers, acting under OPC supervision.

[4] Louisiana Department of Conservation set allowable at 346,031 barrels daily for March.

[5] Calculated daily average of actual production as of March 7 was 1,292,239 barrels, allowing for underproduction of 3.9 percent below net allowable, which was figured at 1,344,963 barrels daily. However, allowable normally increases as new wells are completed, and consequently, actual daily average production for month may be expected to be slightly greater than average as calculated for March 7. Under the new order, most Texas fields were ordered shut down March 1, 7, 8, 11, 12, 14, 15, 18, 21, 22, 25, 30 and 31.

[6] Quotas shown here for Texas, Mississippi, Louisiana and New Mexico, are as revised by OPC; being about 10 percent under originally set allocations.

contracts are to be adhered to, according to reports.

Price Revisions Expected

At the middle of the past week, it was indicated at the Office of Price Administration that authority would be given soon for increases in prices of petroleum products in the East Coast district, in recognition of the higher costs of moving oils into the region by rail. Increases expected were ½ cent a gallon for kerosene and light fuel oils, 19 cents a barrel for industrial fuel oils, and an additional ½ cent a gallon on gasoline to supplement the 3/10 cent advance previously approved. For Florida and Georgia, which were exempted from the 3/10 cent raise, an 8/10 cent increase is contemplated, which would be the same as the ultimate total for the other Atlantic coast states.

Meanwhile, however, with rationing definitely impending, the OPA March 18 froze service station prices for gasoline on the East Coast and in the Pacific Northwest at March 13 levels, and indicated that licensing of stations might be instituted to enforce the ceilings.

For the country as a whole, there has occurred during the past month a decline of approximately ¼ cent a gallon in the average tank car price of gasoline, with demand slowing up, and the average dealer tank wagon price has sagged slightly.

Last week the market for gasoline showed increased weakness almost everywhere outside the East Coast district. In the Appalachian region prices were firm, but there was reported a perceptible easing of demand, in reflection of less driving.

On the Gulf Coast, quotations for refined products were generally unchanged. The shortage of tankers was being at least partially compensated by comparatively heavy rail shipments of bunker oil and light fuel oils as well as crude and gasoline to the Eastern district. Tank cars were employed particularly in movement of the heavy fuel oils, and some refineries discontinued manufacture of ordinary gasoline.

The nautral gasoline market continued weak, in reflection of the reduced demand for motor fuel, and grade 26-70 was quoted as low as 1¾ cents a gallon f.o.b. Breckenridge, Texas, ¼ cent under the last previous minimum and at a low of 2¼ cents f.o.b. Group Three.

In the Middle West and also in the upper Mid-Continent, most grades of gasoline were offered late last week for ⅛ cent a gallon less than at the beginning of the week, as refiners' competition for business increased, with storage tanks generally full or nearly full. Possibly instrumental in the lagging of demand was the lull in sales that followed inauguration of higher freight rates, many buyers having ordered ahead of current requirements when the lower rates still were available. Light fuel oils also were offered late last week in the Mid-Continent for ⅛ cent a gallon less than previously.

Building Loop

Equipment is being moved to right-of-way between Drumright and Prue, Oklahoma, where Sinclair Refining Company has let contract for construction of 22 miles of 14-inch crude oil line. Completion of this addition to the present system will afford capacity equalization.

Magnolia and Atlantic Step Up Rail Shipments

Magnolia Petroleum Company has supplemented its pipe line shipments of Mid-Continent grade crude to Socony-Vacuum Oil Company's refineries in the Middlewest and East with 10,000 barrels daily tank car movement from racks near Oklahoma City and Maud to Paulsboro, N. J. The company recently booked 5000 barrels additional common-carrier space in Sinclair Refining Company's system, which moves Texas and Oklahoma sweet crude north and east from Panova station, Oklahoma. Magnolia is scheduled to start tank car shipments of crude from its Salem, Illinois, tank farm and gathering terminal, to affiliated plants on the East Coast. This increased movement may result in discontinuance of tank-car shipments from the East Texas field to Socony-Vacuum Oil Company's plant near Smithville, New York. Shipments from the East Texas field began February 10, and have averaged 2900 barrels daily.

The Atlantic Refining Company is stepping up its rail shipments of crude oil from the Southwest as tank cars become available. The company is shipping oil from Illinois and Mississippi fields to its main refinery near Philadelphia. Tank-car movement from the Neale field, South Louisiana, range from 2500 to 3000 barrels daily, while the movement from Rodessa has increased to about 5000 barrels daily. Rail movement from the East Texas field dropped to 3800 barrels daily after averaging above 7000 barrels daily since fore part of February.

Neale-to-Atreco Pipe Line Ready May 1

Atlantic Pipe Line Company is scheduled to complete its recently authorized 62-mile 8-inch crude carrier from Neale field, South Louisiana, to Atlantic Refining Company's refinery and tanker terminal at Atreco (Port Arthur), Texas, about May 1. The line will have a capacity of 12,000 barrels daily, utilizing a single booster, which will be equipped with two gas engine-powered reciprocating pumps. Equipment for the application of insulation, adapted to swamp lands, is being set up at Deweyville, Texas. Latex Construction Company has contract to lay the carrier.

Kansas Quota Hearing Moved Up to March 24

The meeting of operators in Kansas to determine the state's allowables for April, previously scheduled for March 26, has been changed to March 24 due to conflict in other schedules.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines' basis, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1939:						
February 18	3,324,300	[6]3,125,000	271,252,000	83,075,000	23,747,000	111,349,000
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[2]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[2]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[1]1,600,800	3,475,000	246,982,000	73,475,000	37,722,000	[2]116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[3]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
October 28	3,498,500	3,520,000	230,453,000	72,660,000	[2]39,562,000	114,786,000
1940:						
January 6	3,584,450	[6]3,370,000	238,581,000	82,002,000	32,183,000	105,247,000
February 10	3,688,100	3,460,000	239,510,000	91,649,000	26,007,000	[6]102,344,000
March 16	[2]3,890,050	3,500,000	246,762,000	100,616,000	24,075,000	103,558,000
April 6	3,745,000	3,455,000	251,897,000	101,690,000	[6]23,551,000	105,099,000
April 20	3,858,550	3,535,000	254,881,000	[2]102,817,000	24,779,000	103,323,000
June 22	3,846,450	[3]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
September 14	3,647,400	3,580,000	262,475,000	83,300,000	46,648,000	[2]109,135,000
October 19	3,667,550	3,525,000	262,098,000	81,656,000	[2]49,051,000	108,141,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	[6]3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
1941:						
January 4	3,367,200	3,600,000	260,643,000	85,053,000	42,403,000	[2]102,448,000
January 11	[6]3,364,450	3,565,000	259,342,000	86,328,000	41,094,000	102,281,000
January 18	3,611,900	[6]3,490,000	259,934,000	87,351,000	39,920,000	101,213,000
March 29	3,746,550	3,625,000	[2]266,187,000	[2]99,727,000	29,949,000	96,152,000
April 12	3,603,650	3,630,000	265,160,000	98,654,000	[6]28,381,000	95,471,000
July 5	3,658,200	3,745,000	258,070,000	90,064,000	36,925,000	[6]92,635,000
October 4	3,860,750	4,015,000	246,144,000	[6]80,879,000	49,553,000	96,016,000
October 18	4,110,550	[1]4,120,000	243,605,000	82,584,000	52,403,000	95,800,000
November 15	4,086,850	4,010,000	[6]240,399,000	83,412,000	[2]54,983,000	95,993,000
1942:						
January 3	4,038,000	3,961,000	244,440,000	92,987,000	49,357,000	95,857,000
January 10	4,229,150	3,891,000	244,364,000	94,204,000	47,250,000	94,885,000
January 17	4,045,600	3,723,000	246,267,000	95,617,000	43,984,000	92,703,000
January 24	4,311,300	3,885,000	248,164,000	96,363,000	41,863,000	92,079,000
January 31	3,871,350	3,848,000	250,740,000	97,810,000	40,674,000	91,189,000
February 7	[1]4,336,900	3,853,000	252,366,000	100,224,000	40,038,000	90,859,000
February 28	4,015,650	3,675,000	259,373,000	105,635,000	34,547,000	88,285,000
March 7	3,934,350	3,530,000	260,064,000	106,668,000	33,386,000	87,531,000
March 14, 1942	**3,515,300**	**3,588,000**	.....	[1]**107,229,000**	**32,831,000**	**85,489,000**
March 14, 1941	3,662,450	3,546,000	[4]264,001,000	98,014,000	32,520,000	95,164,000
Amount Change:						
From week ago	—419,050	+58,000	[8]+691,000	+561,000	—555,000	—2,042,000
From year ago	—147,150	+42,000	—3,937,000	+9,215,000	+311,000	—9,675,000
Percent Change						
From year ago	—4.0	+1.2	—1.5	+9.4	+0.95	—10.2

[1] All time peak. [2] Peak for year. [3] Lowest since April, 1922. [4] Stocks, March 8, 1941.
[5] Lowest since October, 1922, due to shut down of six Mid-Continent states. [6] Lowest for year.
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California.
[8] Latest weekly change.

Continued Drilling Necessary for Supplying War

The Office of Petroleum Coordinator has said that military and war-industry needs for fuel oil likely will require maintenance of crude-oil production at or above the early 1942 level of about 4,100,000 barrels daily. (The yield of residual fuel oil from a barrel of crude probably can not be increased over 5 percent, OPC said.)

Merely for supplying constituents of aviation gasoline, aviation lubricants, toluene and synthetic rubber, nearly 2,600,000 barrels of crude per day will be needed in 1942, said OPC; and requirements will jump to 3,600,000 daily in 1943, on completion of additional plants.

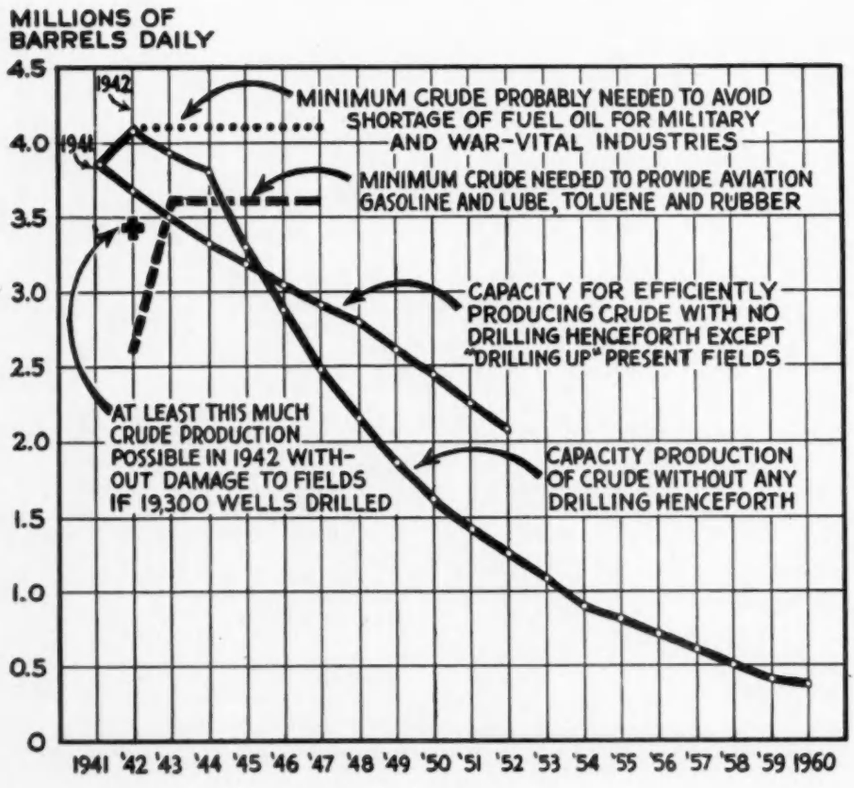
Charted here are curves showing how actual production of crude would compare with the minimum war time requirements under several different conditions with regard to drilling, as calculated by OPC. (THE OIL WEEKLY, *March 2, 1942, pages 14-49.)*

(1) If all drilling had been eliminated as of January 1, 1942, and if production had been maintained as long as possible at the rate then current and thereafter at as high rates as possible, the output of the country's wells would have continued at the early 1942 rate only through the year, and production subsequently would have declined sharply, as shown, falling below critical needs within three years.

(2) If drilling were confined henceforth only to drilling up undeveloped fields hitherto found, a program involving about 11,400 wells, and if production were restricted henceforth to scientifically efficient rates, which would involve no sacrifice of ultimate recovery, then the output in 1942 would cover only aviation and other critical needs and not the full needs for fuel oil, and output in 1943 would fall short of even the critical needs.

(3) If 19,300 efficiently-spaced wells are drilled in 1942 (40 percent less than in 1941), including 4000 wildcats (30 percent more than in 1941), then it will be possible to maintain producing ability well enough to permit efficient production of at least 3,425,000 barrels daily, which will approximately fill the war needs for crude.

Consequently, OPC has recommended to WPB that enough materials be allocated for drilling the 19,300 wells.


MILLIONS OF BARRELS DAILY
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0
1942
1941
MINIMUM CRUDE PROBABLY NEEDED TO AVOID SHORTAGE OF FUEL OIL FOR MILITARY AND WAR-VITAL INDUSTRIES
MINIMUM CRUDE NEEDED TO PROVIDE AVIATION GASOLINE AND LUBE, TOLUENE AND RUBBER
CAPACITY FOR EFFICIENTLY PRODUCING CRUDE WITH NO DRILLING HENCEFORTH EXCEPT "DRILLING UP" PRESENT FIELDS
AT LEAST THIS MUCH CRUDE PRODUCTION POSSIBLE IN 1942 WITHOUT DAMAGE TO FIELDS IF 19,300 WELLS DRILLED
CAPACITY PRODUCTION OF CRUDE WITHOUT ANY DRILLING HENCEFORTH
1941 '42 '43 '44 '45 '46 '47 '48 '49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 1960

Illinois Court Ruling Affects Mineral Rights

Slated to have a far-reaching effect on cases now pending before the United States supreme court, the Illinois supreme court on March 18 ruled a deed by which the Eastern Illinois and Peoria Railroad held certain land in Fayette County gives the carrier only an easement on the land for railroad purposes. The decision reversed the Fayette County circuit court which had held that under the deed the railroad owned the land. The suit was launched by O. L. Tallman and The Carter Oil Company.

Similar suits are now pending before the United States Supreme Court, one brought by The Carter Oil Company, and another by Magnolia Petroleum Company. Carter is listed as a pioneer in the litigation, filing first in the United States district court for the eastern Illinois district, which ruled against it. A similar decision was obtained on an appeal to the Circuit Court of Appeals, but the United States Supreme Court took jurisdiction and awaited the decision of the Illinois supreme court.

Gulf Honors Employes With 10-40 Years Service

Emphasizing the need for efficient, trained labor to speed up war production, J. Frank Drake, president of Gulf Oil Corporation, announced March 16, that 2496 employes will be given service awards for 10 to 40 years of service. These awards will be presented between March 16 and April 10 to employes in different offices of the company in 32 states by local officials. Two employes have completed 40 years of service and 16 have completed 35 years. The number in the other yearly classifications is: 30 years, 44; 25 years, 174; 20 years, 511; 15 years, 1039; and 10 years, 709.

"We believe that the unusually long service records," declared Drake, "increase efficiency of the company and makes it possible for us to make better products for the war effort as well as for industry and car conservation."

The Gulf Service Award Plan was inaugurated in 1939. As of December 31, 1941, 12,366 men and women had service records of from 10 to 40 years, out of a total of approximately 33,000 employes. Therefore, approximately 37 percent of Gulf employes have been with the company 10 years or longer.

"In past years," Drake said, "service awards were presented at dinners or special gatherings at some 40 points. This year, because of the war, it has been decided that no formal affairs would be held. Instead individual presentations will be made by vice presidents, refinery superintendents, division managers and other ranking officials in the different areas."

Shell Keeps Up Pay Of Men in Service

Companies affiliated with Shell Union Oil Corporation will pay the difference between military pay and company salary to married men employes entering the armed forces of the United States or of other members of the United Nations, Shell Oil Company announced last Friday. Such payment by the companies will be up to 50 percent of the employe's salary at the time of his entry into the armed forces.

Since May, 1940, the company has given to employes with one or more years of company service a leave of absence for military duty, maintained their seniority and assured restoration of positions, continued life insurance payments and given a bonus of two months' salary. Such benefits are continued, and the new arrangement affecting married men is retroactive to December 8, 1941.

Socony-Vacuum Building For Toluene Production

Socony-Vacuum Oil Company is building for the government a plant for production of toluene from petroleum in an undisclosed refinery. The company also reports that eight of its refineries are equipped with catalytic cracking units of the Houdry type which are capable of producing base stock for 100-octane aviation gasoline.

U. S. Field Operations

Results on Industry's Prospecting Fronts

Arkansas: Three locations at Midway as another producer added. Third well at Mount Holly has small flow.

Illinois: Wayne County wildcat produces, another shows; White and Franklin County wildcats pumping. Clay County discovery's offset is failure.

Indiana: Posey County in line for new pool; Knox County wildcat believed good for 50 barrels. Vanderburg County wildcat abandoned.

Kansas: Two slight extensions of fields week's only interest.

Kentucky: Wildcat six miles southeast of Henderson in Henderson County, is a failure.

Louisiana Coast: Jefferson Davis Parish wildcat makes distillate. Deeper sands getting normal attention.

Oklahoma: Byars pool, McClain County, apparently extended mile south; testing underway.

Texas Gulf Coast: Aldine discovery continues testing. Fort Bend County extension testing new sand.

North Texas: Western Throckmorton County wildcat showing for oil production in Marble Falls; other data in area mixed.

West Texas: Ward County discovery makes 25 barrels hour, another on test. Lubbock wildcat missed expected pay.

Illinois

Wildcats in Four Counties Get Notice

Wayne County wildcat swabs 37 bbls an hour from Aux Vases; casing set to second Wayne wildcat; Jasper wildcat finds McClosky show; White and Franklin County wildcats put on pump.

Wayne County: First National Petroleum's J. Ellis 1, C SW NE 18-1s-5e, Gulf farmout, swabbing 37 bbls an hour natural from Aux Vases at 2912-32 ft, little gas, no water. Nearest other production is 8 miles. From elev 512 ft, Glen Dean was topped 2439 ft, Renault 2915, St. Genevieve 2980, Fredonia 3037, and St. Louis 3175 ft. Gulf holds offset acreage north, west and east.

New Penn Development's L. P. Harris 1, C W½ NW NE 28-2s-9e, set casing on Lower O'Hara at 3280-39 ft and Rosiclare 3295-3312 ft. Drill-stem test open one hour got 2100 ft of oil, 120 ft of drilling mud and no water. It is 1½ miles east Golden Gate pool.

Jasper County: C. R. Craft and Roy Powers' Benefiel 1, E½ SW NE 7-5n-14w, a mile southwest of St. Marie pool, set on McClosky after 3 ft of saturation was recovered in core at 2866-75 ft, total depth 2879 ft.

White County: Seaboard's Gates 1, pool opener, SW NW SW 3-5s-9e, is on pump, testing Aux Vases at 3227-39 ft; swabbed 108 bbls of oil and 37 bbls of water in 24 hours, water diminishing.

Franklin County: Seaboard's U. S. Coal and Coke 1, C SW SE 14-6s-4e, 10 miles east of Benton, prospective pool opener, on pump test of Cypress 2839-56 ft; swabbed 68 bbls of oil and 17 bbls of water in 6 hours after 30-quart shot.

J .W. Menhall's Valier Coal Co. 1, SE SW SE 1-6s-1e, wildcat, abandoned at 2625 ft after tests of Aux Vases.

Saline County: Fryer and Ratcliff's Grisham 1, NE SW SW 26-7s-6e, wildcat, deepening at 3063 ft after finding only show of oil when plug was drilled to Aux Vases at 3028-49 ft.

Perry County: Shell's J. Shubert 1, C N½ SW SE 23-4s-2w, abandoned at 3014 ft, through Devonian; elev 520, topped Salem 1816, Osage 2297, Chattanooga 2828, Devonian 2855.

Clay County: Pure's Grahn 1, C NE NW 8-5n-7e, first offset to discovery well north of Bible Grove, abandoned at 2889 ft. The discovery, Cameron Oil Co.'s Landwehr 1, NW NW NE 8-5n-7e, flowed 345 bbls in 15 hours after acid treatment; flowed better than 700 bbls daily natural.

COMPLETIONS

Clay County—Pure's Staley 2, c n½ se sw 10-2n-7e, McClos 3077-80 ft, 3082-92 ft, td 3097 ft, 490 bbls; Pearce A3, c n½ se ne 10-2n-7e, McClos 3059-67 ft, 3070-75 ft, td 3090 ft, 947 bbls.

Clinton County—Jack Darnell's Laux 1, c se se 6-3n-2w, abnd 1258 ft.

Fayette County—Carter's Brooks 23-8, se nw se 23-9n-3e, td 1475 ft, gas input.

Hamilton County: Wildcat—Wright et al's Snyder 1, ne se nw 26-6s-1e, abnd 2836 ft. Magnolia's Sloan 9, ne ne se 23-6s-5e, Aux Vases 3079-3105 ft, td 3105 ft, 264 bbls. Shell's Crabtree B6, sw ne ne 23-6s-5e, A.V. 3073-3108 ft, pb 3165 ft, td 3328 ft 110 bbls. Ohio's Hall 3, nw sw sw 8-6s-7e, A.V. 2989-3021 ft, td 3031½ ft, 104 bbls.

Jasper County—Elmer Novak et al's Shryock 1, e½ ne se 6-5n-14w, McCl. 2843-48 ft, td 2861 ft, 270 bbls. Pure's Worchester 1, c e½ se nw 19-5n-10e, McCl. 2865-70 ft, td 2890 ft, 614 bbls.

Jasper County: Wildcat—Pure's Ocks 1, c w½ ne ne 35-6n-10e, abnd 2940 ft.

Madison County: Wildcat—W. C. Cain's Tobias 1, sw sw nw 24-4n-7w, abnd 865 ft.

Marion County—C. F. Frazier et al's Vangilder 1, sw se se 33-1n-2e, Benoist 1963 ft, td 1971 ft, 70 bbls.

Monroe County: Wildcat—Ohio's Fingerline 1, c se nw 26-3s-8w, abnd 675 ft.

Washington County—Magnolia's Koelling 2, sw se ne 15-1s-1w, Benoist 1531-1538 ft, td 1538 ft, 46 bbls.

Wayne County—Pure's Consol 1, c e½ nw se 11-1n-7e, McClos 3076-80 ft, Rosiclare 3040-43 ft, td 3110 ft, 162 bbls. Pure's Hubble B1, c w½ se se 28-2n-8e, McClos. 3024-39 ft, 3076-77 ft, td 3090 ft, 46 bbls. Wiser's Dickey C2, c w½ nw ne 31-1s-6e, Aux Vases 3028 ft, td 3054 ft, 325 bbls.

Wayne County: Wildcats—Schuller & Lynch's Spencer 1, c w½ nw se 2-2s-8e, abnd 3496 ft. Gulf's Henson 1, w½ sw nw 19-1n-5e, abnd 3011 ft.

White County—Sun's Bixenstine 1, se ne ne 7-4s-10w, abnd 3267 ft. Perry-Schriver's Bramlett 1, nw nw nw 15-6s-9e, abnd 2942 ft. Magnolia's Sisson-Higgins 13, nw se se 24-6s-10e, Tar Springs 2263-2276 ft, td 2276 ft, 24 bbls. Kingwood-Sinclair's Hale 1, sw nw sw 1-7s-8e, Walt 2210-2222 ft, Bethel 2747-2760 ft, pb 2764 ft, td 2939 ft, 58 bbls.

WILDCAT STARTS

Clay County—Gulf's Phillips 1, se sw nw 2-3n-7e, lcn.

Edwards County—Percha Atlins' Hessler 1, ne nw 7-1s-14w, dr. C. F. Steele's Geo. Trike 1, se sw sw 25-1s-10e, dr. Superior's Thread

Summary of Drilling Operations in the United States, Week Ended March 21, 1942

	TOTAL WELLS COMPLETED							WILDCAT COMPLETIONS‡				
	Completions	Oil Wells	Gas Wells	Failures	†Miscellaneous	Total 1942	Total this Date 1941	Total this Week	Oil Wells	Gas Wells	Failures	Total 1942
Alabama	....	....	....	....	....	2	....	....	....	....	....	2
Arkansas	2	2	....	....	....	33	31	....	....	....	....	3
California	13	11	....	2	....	210	247	....	....	....	....	6
Colorado	....	....	....	....	....	3	3	....	....	....	....	....
Georgia	....	....	....	....	....	1	....	....	....	....	....	1
Illinois	23	14	....	8	1	580	669	5	....	....	5	98
Indiana	9	4	....	3	2	93	106	....	....	....	....	2
Kansas	10	2	....	6	2	393	425	1	....	....	1	84
Kentucky	1	....	....	1	....	40	57	....	....	....	....	....
Louisiana	9	6	1	2	....	269	311	6	....	....	6	42
Michigan	7	4	....	3	....	168	176	4	1	....	3	38
Mississippi	3	1	....	2	....	41	32	1	....	....	1	10
Missouri	1	....	....	1	....	7	14	....	....	....	....	....
Montana	....	....	....	....	....	36	48	....	....	....	....	....
Nebraska	....	....	....	....	....	9	21	....	....	....	....	2
New Mexico	12	7	1	4	....	98	78	2	....	....	2	8
New York	22	12	....	....	10	300	146	....	....	....	....	....
Ohio	15	4	10	1	....	313	331	....	....	....	....	....
Oklahoma	26	9	1	10	6	431	419	4	....	....	4	63
Pennsylvania	63	55	6	2	....	825	773	....	....	....	....	....
Tennessee	....	....	....	....	....	2	5	....	....	....	....	....
Texas	104	64	2	29	9	1,803	1,975	12	....	....	12	261
West Virginia	17	2	11	2	2	180	160	....	....	....	....	....
Wyoming	....	....	....	....	....	21	24	....	....	....	....	1
Total this week	337	197	32	76	32	5,858	6,051	35	1	....	34	621
Total last week	356	219	31	81	25	5,521	5,526	43	4	1	38	586
Total this year	5,858	3,435	480	1,339	604	....	....	621	70	7	544	....

† Includes old wells deepened, water intake, gas input, and salt water disposal wells.

‡ OPC program calls for 4,000 wildcats in 1942, of which 624 should produce oil and 116 gas, leaving 3,260 dry.

2, 238 ft w of se ne ne 31-1s-11e, lcn. Superior's Huber 1, ne se se se 7-2s-14w, lcn.

Fayette County—Troop & Larsen's Larimore 1, c ne se ne 25-9n-3e, lcn.

Monroe County—W. Payne's Ekler 1, w½ nw ne 24-1s-10w, dr.

Richland County—Pure's Grubb 1, w½ sw se 36-3n-8e, dr.

Indiana

Posey County Wildcat Promises New Pool

Posey County: Paul Rossi's Mauzy 1, NE NW NW 8-7s-12w, wildcat 4½ miles east of Mt. Vernon field, was preparing to drill plug for prospective new pool opener in Aux Vases sand, 2609-17 ft. Elevation 380 ft, Menard 1780, Waltersburg 2205; Barlow 2339-45; Cypress 2370; Renault 2530; casing 2600 ft.

Carter's Baker 1, C SW NW 9-7s-14w,. McClosky discovery well west of Mt. Vernon field, pumped 200 bbls of oil and no water in 13 hours following 2000-gallon acid.

Knox County: Sinclair - Wyoming's J. Brevoort 1, SW SW SE 15-2n-11w, wildcat northeast of St. Francisville, was testing McClosky at 1840-43 following 3000 gallons acid. Total depth is 1936 ft. Indications are the well is good for 50 barrels a day.

Gibson County: Kingwood Oil Co.'s Fithan 1, E½ SE SE 23-1n-10w, in the Hazleton area, set casing to Osage lime saturation, which flowed on drill-stem test, after bottoming in dry Devonian and plugging back.

Vanderburgh County: Hewitt and Nye's Ziss 1, SW SE SW 30-5s-11w, wildcat five miles northwest of Evansville, abandoned at 2789 ft. Starting at 535 ft, Pennsylvanian was topped at 1790; Menard 1834; Waltersburg 1908-62; Glen Dean 2082; Cypress 2397 ft. Drill-stem test of McClosky at 2763-79 ft, 1700 ft of sulphur water and scum of oil showed in 30 minutes.

COMPLETIONS

Gibson County—Kingwood Oil Co.'s Potts 1, 20 ft n of c e½ ne se 23-1n-10w, pb 1865 ft, McClosky 1706-12 ft and 1848-1856 ft, td 2112 ft, 55 bbls. Big Four's Shoultz 1, 100 ft s of ne nw nw 20-1s-9w, abnd 2340 ft. R. D. Brown's Blood 1, se ne se 36-2s-13w, Penn sand stone 1096-1101 ft, td 1104 ft, 35 bbls.

Hamilton County—H. C. Baldwin Agy's Newby 1, se nw nw sw 13-19n-3e, abnd 1061 ft.

Jay County—N. N. Smith's Rhodes 1, apx. c n½ se nw 24-22n-14e, Trenton 1100-1111 ft, td 1111 ft, 20 bbls.

Randolph County—John Seip et al's Ward 1, ne nw ne nw 10-20n-14e, abnd 1360 ft.

Vanderburg County—Sells Pet. Co.'s McCarthy 1, ne sw nw 32-6s-11w, Waltersburg 1718-1736 ft, td 1736 ft, 170 bbls.

OLD WELLS DEEPENED

Gibson County—Gibson Trust's Kerr 1, 150 ft e of ne sw ne 26-1n-10w, otd 1742 ft, McClosky 1737½-42 ft and 1787-95 ft, td 1815 ft, 35 bbls.

Posey County—Harry Appell et al's Graulich 1, sw ne sw 13-7s-13w, otd 797 ft, abnd 1166 ft.

WILDCAT STARTS

Starke County—Elmer Hostetler's Zahn 1, c nw ne nw 14-33n-4w, lcn.

Vigo County—S. E. Bailey's Hill 1, se sw se nw 34-10n-9w, lcn.

MISSOURI

COMPLETION

Clay County—Bradford & Son's Street 2, sw sw sw 5-50n-33w, abnd 287 ft.

KENTUCKY

COMPLETION

Ohio County—Mike Callas et al's Atherton 1, 20-M-29, abnd 1641 ft.

Oklahoma

Apache Well Makes 400 Barrels Hour on First Test

New producer added to Apache field; Byars pool gets good extension well; Hotulke district holds state spotlight with two wells in pay horizons.

Caddo County: Texas Co.'s Mulkahay 5, SW SE SE 2-5n-12w, southeast flank of Apache pool, topped Wilcox-Bromide zone at 3659 ft, drilled and cored to 3871 ft, washed into production, well made estimated 400 bbls oil the first hr through casing, testing continues through tubing. Operator's Mulkahay 6, NE NE SE Sec 2, drilling 4077 ft with no pay sand encountered.

McClain County: C. W. Roodhouse's Strawn 1, C NE NE 21-5n-3e, extends Byars pool nearly 1 mi south, well topped Viola lime 3514 ft, drilled to 3551 ft, drill-stem test showed 500,000 gas and tool filled with oil in 12 min, casing set for production test.

Pottawatomie County: Phillips Petroleum Co.'s Billington 1, C SW NE 25-9n-4e, topped Second Wilcox sand 4458 ft, drilling below 4475 ft in slightly stained sand. R. Olsen Oil Co.'s Meazel 1, C NW SW 24-9n-4e, topped Hunton lime 4185 ft, drilled 4186 ft, set casing for test of Hotulke's principal producing horizon. Operator's Trice 1, C SE NE Sec 23, set surface casing and moving in tools at Harrington 1, C SE NW Sec 24. Ohio Oil Co.'s Meyer 1-A, NW NE NW Sec 21, looking for Second Wilcox sand at 4728 ft.

COMPLETIONS

Caddo County: Apache—Texas Co.'s Mulkehay 3, sw ne se 2-5n-12w, Bromide, td 3900 ft, flow 1716 bbls.

Caddo County: Cement—Ohio's Wagner Acc. 1 se ne sw 12-5n-9w, abnd 163 ft.

Cleveland County: Wildcat—Phillips' Heenan 1, se ne se 6-8n-1e, Belle City 4180 ft, Ccb 4686 ft, Base Penn & Hunton chert 6017 ft, Hunton 6021 ft, Sylvan 6351 ft, Viola 6460 ft, abnd 6822 ft.

Comanche County: Wildcat—Texas Co.'s Reich 1, nw nw ne 25-4n-11w, abnd 3493 ft.

Creek County: Kellyville Dist.—Bell Oil & Gas Co.'s Stanley 3, ne nw se 33-18n-10e, Dutcher 2658 ft, abnd 2686 ft.

Jefferson County: Oscar—Sletz-Comegys-Sletz's Bounds 1A, sw sw sw 13-6s-6w, abnd 1855 ft.

Kay County: Dilworth—C. O. Leonard's Hitch 1, ne ne sw 19-28n-1e, Wilcox 3314 ft, td 3344 ft, pump 70 bbls.

Lincoln County: Wildcats—Helmerich & Payne's Harper 1, c s½ sw nw 20-14n-5e, Hogs 2490 ft, Ccb 2835 ft, U Clev 2865 ft, L Clev 2905 ft, Osw 3575 ft, Prue 3664-3710 ft, Bart 4052-57 ft, brn lime 4170 ft, Miss 4300 ft, Wood 4510 ft, Hunton 4554 ft, abnd 4856 ft. Mid-Continent's Walker 1, se sw sw 13-14n-6e, Bell City 1310 ft, Hogs 1640 ft, Ccb 2025 ft, Osw 2923 ft, Bart 3352 ft, abnd 3465 ft.

Okfuskee County: W. Okemah—Burk Gries et al's Camp 2, ne sw nw Wapanucka 3395 ft, abnd 3455 ft.

Oklahoma County: Oklahoma City—British American's Shield's 4, se c nw sw 15-11n-3w, Wilcox 6415 ft, td 6497 ft, pb 6493 ft, pump 32 bbls oil 16 bbls water.

Okmulgee County: Coalton—A. L. Wilson's Jackson 1A, se e sw nw 26-12n-13e, sand 1278 ft, td 1304 ft, shot 30 qts, pump 2 bbls oil and 10 bbls water.

Okmulgee County: Okmulgee—Wood's McAdoo 4A, ne c se 28-13n-13e, Miss lime 1728-58 ft, td 1758 ft, input.

Osage County: Osage City—Barnsdall's Water Flood 3, nw se se nw 30-21n-9e, sand 356 ft, td 376 ft, shot 26 qts, repressure.

Osage County: Naval Reserve—Kay County Gas Co.'s 11D, nw nw nw 23-24n-7e, Brugess 2568-79 ft, td 2579 ft, 2,500,000 gas.

Osage County: Nelagony—Cities Service's 481, sw nw sw 13-25n-10e, Arb 2155 ft, abnd 2157 ft.

Osage County: Hickory Creek—A. G. Oliphant's 5, se ne ne sw 34-29n-11e, sand 877-92 ft, td 938 ft, pump 2 bbls.

Pontotoc County: W. Fitts—C. W. Roodhouse's Hunter 1, c e½ sw ne 28-2n-6e, Cromwell 3219 ft, td 3304 ft, pb 3299 ft, pump 75 bbls.

Pottawatomie County: Unnamed—Bishop's Haney 1, nw c sw ne 15-4n-6e, Allen 802 ft, td 816 ft, shot 20 qts, pump 16 bbls.

Pottawatomie County: E. Tecumseh—Ohio's Sandefur 1, nw nw ne 21-9n-4e, 2nd Wilcox 4808 ft, dry 4830 ft.

Pottawatomie County: W. Hotulke—Ohio's Billington 2, se sw se 22-9n-4e, Wilcox 4460 ft, td 4465 ft, pump 51 bbls oil and 5 bbls water.

Pottawatomie County: Hotulke—Midstates' Nedeau 2, ne ne 25-9n-4e, Hunton 4089 ft, pay 4088-96 ft, td 4164 ft, perf, flow 196 bbls.

OLD WELLS DEEPENED

Creek County: Glenn—Gulf's Escoe 4, ne sw se 8-17n-12e, otd 1575 ft, Glenn 1553-1640 ft, td 1697 ft, pb 1640 ft, shot 170 qts, pump 1 bbl oil & 40 bbls water.

Kiowa County: Hobart—Argo's Ratcliff 4, nw ne ne 19-7n-17w, otd 1210 ft, lower Chimneyhill 1670-05 ft, td 1831 ft, pb 1685 ft, pump 18 bbls.

Okmulgee County: Simmon-Black—W. O. Shock et al's Douglass 1, ne nw se 17-14n-11e, otd 2460 ft, Dutcher 2384 ft, pay 2442-60 ft, td 2460 ft, pump 120 bbls.

Pottawatomie County: St. Loupis—Alma Oil Co.'s Smith 1, se se ne 32-7n-5e, otd 4059 ft, dolomite 4026 ft, pay 4118 ft, td 4135 ft, pump 50 bbls oil and 150 bbls water.

WILDCAT STARTS

Creek County—J. E. Crosbie Inc.'s Dailey 1, se ne nw 12-18n-7e, sp.

Hughes County—Phillips' Townsend 1, nw ne sw 17-7n-11e, lcn.

Lincoln County—Superior's Knipe 1, sw sw ne 9-17n-2e, lcn.

Logan County—Gulf's Pulliam 1, c ne ne 20-16n-4w, br.

Okfuskee County—Richard Hughes et al's Grugg 1, se ne se 13-11n-7e, rur.

Osage County—Dunn & Miller's Osage 1, sw sw sw 30-24n-11e, lcn. Norbla's Osage 1, nw nw sw 21-24n-6e, dr.

Pawnee County—Johnson Oil & Ref. Co.'s Lewis 1, c s½ nw se 20-20n-9e, dr.

Payne County—Mutual et al's Tigner 1, ne nw nw 19-20n-4e, rig. Alma Oil Co.'s Deroin 1, sw nw nw 25-23n-3e, lcn.

Seminole County—Kerlyn's Washington 1, nw sw nw 8-8n-7e, dr. Deep Rock's Jones 1, ne se se 17-8n-8e, br. Joe Scroggins et al's Patterson 1, nw nw nw 30-6n-7e, lcn.

Kansas

Field Extensions Showing In Phillips and Rice

M-68 ruling slows Kansas field work to snail's pace; extensions for Phillips and Rice Counties only major interest in week.

Phillips County: Carter Oil Co.'s Dusen 1, C SE SE 35-2s-19w, extends Dayton pool ¼-mi southwest, well drilled to 3311 ft in Lansing-Kansas City lime, ripped casing 3300 ft, acidized with 10,000 gals, well received state potential of 272 bbls daily. Operator's Garber 2, C SW SW Sec 36, new start.

Rice County: Lauck and Moncrief's Sledd 2, C N½ N½ NW 22-19s-9w, extends Campbell pool location east, swabbing 30 bbls oil per hr natural after 2500 ft fillup, topped Arbuckle lime 3218 ft, drilled to 3233 ft, may acidize. Anderson-Prichard Oil Corp.'s Yeo 1, extension NEc NE 30-20s-10w, topped Arbuckle lime 3291 ft, drilled to 3294 ft, swabbed 70 bbls oil in 24 hrs, acidizing for production test.

COMPLETIONS

Barton County: Prusa—Texon's Esfeld 2, c e½ sw sw 20-16s-11w, Sooy Congl 3314 ft, pump 140 bbls, td 3329 ft.

Barton County: Northeast Kraft—J. J. Lynn's Bedford 1, c s½ sw ne 36-16s-11w, Arbuckle 3405 ft, abnd 3407 ft.

Butler County: Wildcat—Allison et al Rutherford 1, nw nw se 3-27s-5e, Miss Lime 2740 ft, dry 2752 ft.

Cowley County: Frog Hollow—Blair & Rooney's Coffman 1, nw sw nw 15-32s-5e, Miss Lime 3146 ft, dry 3168 ft.

Kingman County: Wildcat—Stanolind's Tredick 1, c w½ nw sw 28-29s-7w, Lansing 3350 ft, Miss 4122 ft, Kinderhook 4405 ft, Misener 4518 ft, Simpson 4519 ft, Arbuckle 4637 ft, dry 4669 ft.

Marion County: Lost Springs—Larieux & Herrington's Honska 1, c e½ ne ne 5-18s-4e, Miss Lime 2409 ft, pay 2437-2441 ft, abnd 2441 ft.

Rice County: Geneseo—Continental's Gray 5, sw ne sw 19-18s-7w, Arbuckle 3175 ft, td 3200 ft, 3000 bbls.

Sumner County: Zyba—Waite Phillips' Long 1, c se se 12-30s-1w, Arb 3932 ft, dry 3942 ft.

OLD WELLS DEEPENED

Greenwood County: Beaumont—K. T. Weideman's Lewis A-11, ne sw sw 25-27s-8e, otd

1740 ft, Miss lime 2417 ft, pay 2527-2530 ft, td 2540 ft, pump 40 bbls.

Rooks County: Westhusin—Consumers Co-op.'s McClay 1, c e½ sw sw 12-9n-17w, otd 3280 ft, pay 3219-3224 ft, pay 3334-40½ ft, td 3340½ ft, 5000 gals acid, pump 302 bbls.

WILDCAT STARTS

Ellis County—Shell's Miller 1, nw ne se 27-12s-17w, dr. Sharon Drlg.'s Orth 1, c e½ ne ne 5-14s-19w, mim.

Jefferson County—E. V. Jackson et al's Baker 1, c nw ne 18-9s-20e, lcn.

Harper County—Texas Co.'s Ford 1, ne ne sw 30-33s-6e, rur.

Leavenworth County — Frank Whitten's Courtney 1, c sw ne 15-9s-20e, Oread 70 ft, Base Hertha 715 ft, sd.

Stafford County—Vickers Petr.'s Knode 1, sw½ nw nw 14-25s-11w, rig.

Nebraska

Falls City Extension Shows Encouragement

Twelfth producer added Barada pool; small oil fillup in Falls City extension well; other Richardson County activity slowed by rain, snow and mud.

Barada: Skelly Oil Co.'s Schawang 1, SW NE 36-3n-16e, set casing 2520 ft, perforated and acidized with 2000 gals, now on pump with no potential announced.

Falls City: Towle and Isaacks' Sibbernsen 1, SW SW SE 17-1n-16e, may extend pool east; had slight oil fillup after perforating in Hunton lime at unrevealed depth, no estimate of production.

WILCAT START

Sherman County—Carter's Hauser 1, c nw nw 21-13n-13w, lcn.

New Mexico

Lea County Wildcat Hits Gas in Upper Lime

North Central Lea County wildcat encounters gas in upper lime. Delaware prospect in south portion county abandoned in water.

Lea County: Mascho Oil Co. and American Drilling Corp.'s State-Tidal 1, C SW NW 18-12s-35e, 7 mi northwest of Tatum and 30 mi north of Vacuum field, logged high-pressure gas at 3950-65 ft, with first lime stringer 3928-40 ft. Well threatened to clean itself, and drill pipe stuck after progressing to 4045 ft. Base salt and top Yates called at 2800 ft and 2870 ft, respectively, elev. 4135 ft, 70 ft high to 4793-ft failure 4 mi northeast.

Delaware Failure: Prexy Wilson et al's Saunders 1, 6 mi west of Jal field and most easterly Delaware test in Lea County, developed 3300 ft salt water in drilling to 5148 ft, entering lime at 5100 ft and sand at 5140 ft.

COMPLETIONS

Chaves County: Wildcat—Brewer Drlg. Co.'s State 1, c ne sw 15-14s-29e, elev 3807 ft, salt 330 ft, sul w 3300-05 ft, abnd 3318 ft.

Eddy County—Grayburg's Burch 4-B, c se sw 23-17s-29e, flow 70 bbls ¾-in, acid 1500 gals 2680-2892 ft. J. E. Hughes et al's Brooks 8, ne sw nw 19-17s-28e, pump 3 bbls, 545-551 ft. R. J. Johnston et al's Harbold 5, nw se se 26-17s-27e, abnd 514 ft. Saikins & Oliver's Shufflebarger 1, nw se nw 6-18s-28e, abnd 705 ft. Sanders Bros. et al's Etz 2, c ne se 34-16s-30e, flow 165 bbls, 2-in, shot 250 qts, 2935-3015 ft; Leonard 4, c ne sw 34-16s-30e, flow 79 bbls, 2-in, shot 150 qts, 2974-3011 ft.

Lea County: Maljamar—A. H. Hover et al's State 4, c sw ne 32-17s-32e, flow 160 bbls cas, shot 200 qts, 4100-50 ft. Maljamar O&G Corp.'s Mitchell 7-B, c nw sw 20-17s-32e, flow 180 bbls, ½-in, 3622-3788 ft.

Lea County: Salt Lake—Continental et al's Smith 1-18, c nw ne 18-20s-33e, pump 291 bbls 31-gr, sandy-lime 3016-34 ft.

Lea County: Skelly — Western Gas Co.'s Duthie 1, c nw se 18-23s-37e, 6,200,000 gas, open cas, acid 1000 gals 3360-3452 ft, td 3683 ft.

Lea County: Wildcat—Prexy Wilson et al's Saunders 1, c se se 11-25s-35e, elev 3185 ft, anhydrite 870 ft, salt series 1170-3570 ft, Delaware lime 5000 ft, sand 5140 ft, abnd in water 5148 ft.

WILDCAT START

Eddy County—Yates & Stroup's Koonce 1, c se nw 21-19s-31e, mim.

West Texas

Ward County Discovery Flows 25 Barrels Hour

Official gauge given Ward County discovery, and new prospect for county flowed natural on preliminary test. Big wells in Crane and Ector counties. Lubbock wildcat missed projected pay.

Ward County: Darby Petroleum Corp.'s University 1, C SE SW Sec 19, Blk 16, 1⅓ mi west by south of South Magnolia-Sealy pool, flowed 25 bbls oil per hour on drill-stem 2817-47 ft, elev 2614 ft. Five-inch cemented at 2817 ft for completion. Involves reef-type structure similar to the series that extend generally north and south across Ward and Winkler counties, and serving as the western barrier for Permian production.

Stanolind's Byrd 1, 3½ mi south of Spencer pool, both on the reef trend, flowed 29 bbls oil initial on ⅛-in tubing choke, 105-quart nitro shot 2637-79 ft. This discovery drilled to sulphur water 2855-80 ft, then plugged back to 2679 ft, elevation 2594 ft.

Lubbock County: J. R. Sharp et al's Holeman 1, 2½ mi south of the county's sole producer, proved dry in the 4900-ft Permian and was fishing drill pipe at 5430 ft. Stanolind's Stinnett 1, 6 mi southeast of the producer, retained its favorable structural position in drilling below 4530 ft, top San Andres 2980 ft, elev 3136 ft.

Crockett County: Amerada et al's Todd 1-H, mile north of West Todd deep discovery, tested water in Crinoidal 6360-6500 ft, and drilling dry Simpson 6898 ft with Ellenburger as next objective. Entered Crinoidal and Simpson at 6360 ft and 6632 ft, respectively, elev 2411 ft, being 57 ft high on the first and 6 ft high on latter.

Deep Prospects: Plymouth Oil Co.'s Alford 1, eastern Upton County, succeeded in sidetracking below 5½-in liner at 9675-10,000 ft, total depth 10,194 ft, and drilling new hole 10,051 ft in Devonian, topped 10,018 ft, elev 2669 ft. Shell's Sealy - Smith 1, northeastern Ward County, drilling shale 9640 ft, with Ellenburger due near this level. In southern Andrews County, Phillips Petroleum Co.'s University - Andrews 1-A drilling lime 6160 ft. Gulf's Foster 1-C, Sterling County Ordovician project, drilling lime 5048 ft.

Pecos County: Magnolia's Loar-State 1, mile southeast outpost for Abell field, proved dry in upper Simpson, and drill-stem of Sharp sand 5854-74 ft yielded 20 ft of oil-cut mud. Coring resumed, with production outlook doubtful. Magnolia and Stanolind's State-Sharp 1, offsetting production on west edge field, abandoned 5932 ft, although structurally favorable the Simpson lacked porosity.

Big Wells: Gulf's Waddell 52, south edge of Gulf-Waddell field, Crane County, earned potential rating 9494 bbls 35.9-gr oil, gas-oil ratio 387/1 based on 6-hr open-flow after using 5000 gallons acid 3487-93 ft. The east edge of Foster structure listed two prolific natural wells. Sunray Oil Co.-York & Harper's Bagley 4, NW NE SE T&P 17, rated at 5109 bbls 34.7-gr, gas-oil ratio 178/1, broken saturation 4232-4395 ft, and C. O. Davis et al's Judkins-Atlantic 4, SWc NW T&P 16, rated 3060 bbls initial at 4290-4423 ft. Latter is south offset to 12,710-bbl well, the largest in the field.

COMPLETIONS

Cochran County: Slaughter—Continental's Dean 1, sec sw 1600-ac lse, Martin CSL, 58, flow 788 bbls 2-in, acid 12,000 gals 4946-95 ft. Devonian Oil Co. et al's Duggan 13-A, nwc lab 1, leag 55, Oldham CSL, flow 1350 bbls, 2½-in, acid 12,500 gals, 4940-5023 ft; Duggan 13-B, nwc lab 20, leag 55, Oldham CSL, flow 1002 bbls, cas, acid 12,500 gals, 5018-64 ft. Honolulu's Dean 6, 510 ft from s, 2167 from e leag 58, Martin CSL, flow 769 bbls, 2½-in, acid 10,000 gals, 4960-5030 ft; Igoe-Smith 30, sec lab 17, leag 56, Oldham CSL, flow 974 bbls, 2½-in, acid 10,000 gals, 5014-40 ft.

Crane County: Gulf-Waddell—Gulf's Waddell 52, ne se se PSL 10, blk B-23, flow 9494 bbls 35.9-gr, acid 5000 gals, 3487 ft.

Ector County: Foster—Sinclair Prairie's M. Gist 10, nw nw ne T&P 44, blk 42, T-1-S, abnd 4360 ft.

Gaines County: Wasson — Continental & Amon Carter's Wasson 15-48, swc se PSL 48, blk AX, flow 375 bbls, 2-in, acid 7000 gals, 4880-4967 ft.

Gaines County: Wildcat—Fred Postelle et al's Doss 1, 3438 ft from s and 660 ft from w lines leag 293, Lynn CSL, elev 3118 ft, anhydrite 2450 ft, abnd 5300 ft.

Hockley County: Slaughter — Honolulu's Mallet 19-B, swc lab 5, leag 49, Edwards CSL, flow 790 bbls 2½-in, acid 10,000 gals, 4950-5015 ft; Slaughter 9-A, nwc lab 5, leag 40, Maverick CSL, flow 1234 bbls, 2½-in, acid 10,000 gals, 4860-4960 ft; Slaughter 34-B, sec lab 50, leag 37, Edwards CSL, flow 1445 bbls, 2½-in, acid 10,000 gals, 4931-5018 ft. Magnolia's Mallet 9-B, nec lab 7, leag 50, Scurry CSL, flow 1618 bbls, cas, acid 10,500 gals, 4985-5020 pt; Mallet 13-B, nwc lab 8, leag 50, Scurry CSL, flow 1109 bbls, cas, acid 10,500 gals, 4954-5015 ft; Mallet 16-B, swc lab 8, leag 50, Scurry CSL, flow 1635 bbls, cas, acid 10,500 gals, 4975-5030 ft; Mallet 12-C, flow 1195 bbls, cas, acid 10,500 gals, 5035-57 ft. Texas Co.'s Slaughter 115, nwc lab 95, leag 38, Zavalla CSL, flow 696 bbls, cas, acid 10,500 gals, 4995-5025 ft.

Pecos County: Abell—Magnolia's McIntosh-State 1, c lot 14, H&GN 22, blk 9, flow 671 bbls, ½-in, McKee sand, 5476-84 ft. Magnolia and Stanolind's Sharp-State 1, c lot 11, H&GN 22, blk 9, Simpson 4960 ft, McKee sand 5430 ft, abnd 5932 ft.

Pecos County: Apco—Skelly's Crockett 1, 4873 ft n 3349 ft w of sec TCRy 5, blk 110, 919 bbls, ½-in, Ellenburger perf 4664-4764 ft, td 4787 ft.

Upton County: Gulf-McElroy — Gulf's McElroy 268, 2200 ft from s and 1320 ft from w sec 194, blk F, flow 502 bbls, shot 946 qts, 2990-3198 ft, td 3208 ft.

Winkler County: Keystone—Sid Richardson & Bass' Jenkins 3, nwc se PSL 13, blk 77, flow 667 bbls, cas, shot 280 qts, 3314-3402 ft, td 3422 ft.

Yoakum County: Wasson—American Liberty & Atlantic's Elliott-Texaco 6, sw se 769, flow 239 bbls, cas, acid 10,500 gals, td 5229 ft. Humble's Randall 19, c nw nw 833, flow 483 bbls, ¾-in, acid 6000 gals, perf, 4990-5116 ft.

OLD WELLS DEEPENED

Crane County: Dune—Wasomes Oil Co.'s University 2-6, se nw ne sec 6, blk 30, otd 3313 ft, pump 100 bbls, shot 300 qts, 3280-4467 ft, td 3376 ft.

Crane County: Gulf-McElroy—Gulf's McElroy 21, near c ne ne sec 20, blk F, otd 2924 ft, pump 193 bbls, shot 1020 qts, 2781-2993 ft, td 3003 ft.

WILDCAT START

Midland County—Broderick & Calvert-Geo. P. Livermore's Wilson Bryant 1, c nw sw T&P 23, blk 39, T-3-S, mim 5500-ft test

TEXAS PANHANDLE

COMPLETIONS

Gray County—Moran Bros. Drlg Co.'s Davidson 3, H&GN 65, blk B-2, pump 121 bbls, shot 240 qts 2985-3078 ft, td 3086 ft. Skelly's Lovett 10, H&GN 36, blk B-2, pump 255 bbls shot 183 qts 2925-62 ft.

Hutchinson County — Danube Oil Corp.'s Sanford 14-A, H&TC 78, blk 46, pump 249 bbls, lime 2805-2828 ft. J. M. Huber Corp.'s Bryan 8, TCRy 2, blk M-24, flow 408 bbls, 3189-3230 ft; Weatherly 3, A&B 26, blk Y, flow 558 bbls, gas lift, td 3027 ft. Dave Rubin et al's Merchant 3, H&TC 38, blk 47, pump 30 bbls oil and 30 bbls water, lime, 2560-2848 ft. Phillips' Yake 5, H&TC 35, blk 47, 21,300,000 gas, 212 lbs rock pressure, acid 3000 gals, 60 perforations 2725-54 ft, td 2953 ft.

OLD WELL DEEPENED

Carson County—Stanolind's Cooper 6, se nw nw I&GN 5, blk 9, otd 3160 ft, pump 156 bbls, shot 500 qts, 3105-97 ft.

North Texas

Throckmorton Test Shows Oil in Marble Falls

Western Throckmorton County prospect showing for oil producer in Marble Falls. Nominal oil shows logged by deep wildcats in Montague and Cooke counties.

Throckmorton County: Jones-Stasney-Groover & Rose's Brockman 2, C SW Blk 94, Comanche Indian Reserve and ¼-mi east of their 4716-ft junked discovery, filled 500 ft with oil in 14 hrs after drilling plugs from 5½-in at 4707 ft, total depth 4734 ft in Marble Falls, topped at 4705 ft. Acid treatment scheduled.

Cooke County: Lou Stogner et al's Berry 1, 2 mi north of Rosston and in southwest part of county, was attempting drill-stem test in Ellenburger 5920-24 ft. Nominal evidence of oil stain and odor was logged at intervals in the Bend, topped at 5310 ft, and immediately above the Ellenburger dolomite.

Montague County: Sinclair Prairie's Collier 1, 6 mi east of Montague, drilling 6790 ft; drill-stem test in Bend conglomerate 6657-71 ft yielded 50 ft gas-cut mud and 400 ft salt water. Company's Jones 1, 1¼ miles northeast Forestburg, was coring oil-stained lime 7352 ft; drill-stem 7210-36 ft returned 75 ft oil-cut mud and no water. Third wildcat for company, involving Henderson 1, 2 mi east by north of Denver, yielded 30 ft mud, with trace oil, on drill-stem in Bend 5718-33 ft, and drilling shale 5966 ft. Continental's Mueller 1, 6 mi east of Bowie, drilling 6330 ft, having entered Bend at 5992 ft.

Jack County: Wilcox Oil & Gas Co.'s Bloodworth 1, 6 mi east of Antelope, was coring 6105 ft, having topped Bend at 5211 ft and Ellenburger 6070 ft. Taubert-McKee and Sinclair Prairie's Boyd 1, 3 mi south of Post Oak, drilling shale 5550 ft.

COMPLETIONS

Archer County: Wildcats—Sinclair Prairie's Coleman 1, 467 ft out swc blk 6, Brazos CSL sur A-18, Bend 5292 ft, Barnett shale 5549 ft, detrital 5862 ft, Ellenburger 5879 ft, abnd 5892 ft. W. C. Young-Kimbell & Bohner's Abercrombie 1, 1470 ft from s and 1170 ft from e lines sec 109, Harris Club Ranch, abnd 1397 ft.

Archer County: Griffin-Kadane—K. & G. Prod. Co.'s Griffin 3-D, 330 ft from e and 1320 ft from s of w½ sec 14, Palo Pinto CSL, flow 461 bbls natural, ¾-in, Strawn 4339-68 ft.

Baylor County: Wildcat—Tom Sessions et al's Howe 1, sec 3, E. Irish sur A-727, abnd 1800 ft.

Clay County: Wildcats—Bridwell Oil Co.'s Edrington 19-A, 660 ft from se and sw lines 320-ac tr, nw part BBB&C 24, A-898, abnd 1571 ft. Dudley-Fisher & Kahn's Henderson 1-B, 960 ft from n and 900 ft from e lines S. Hernandez sur A-185, abnd 1351 ft.

Clay County: Ringgold—Gulf & Gant's Worsham-Spring 6, 2304 ft from n and 1006 ft from e H&TC 37, blk 4, Bend 5482 ft, flow 1848 bbls 46.8-gr, ¾-in, acid 5000 gals, 5482-5557 ft.

Montague County: Roxy—H. F. Gibson & Jennings' Howard 1-A, 1980 ft. from e and 686 ft from s Kaufman CSL 90, abnd granite 4454-67 ft.

Throckmorton County—M. A. Grisham et al's Kelly 1, pump 21 bbls, sand 733-50 ft.

Wichita County—C. W. Clark et al's Munger 1-A, KWVFL 30, pump 100 bbls, perf 1489-93 ft, td 1737 ft.

Wilbarger County: Consolidated—Consolidated Oil Co. et al's Barnes 2-K-E, e sw nw H&TC 11, blk 7, pump 224 bbls 43-gr, plus 30% water, acid 10,000 gals, Ellenburger, 4282-4469 ft.

Young County—Anzac Oil Corp.'s Gathright 1, TE&L 2933, abnd 2897 ft. Tex-Tor Oil Corp.-Jerome McLester's Mosely 6, sec 113, B. G. Mosely sur A-2222, flow 964 bbls, 1-in, acid 4000 gals, Bend 3781-3846 ft.

WATER INPUT WELL

Young County—Cable Oil Co.'s Williams 14, 700 ft from e and 1050 ft from n lines W. Adams sur, A-1364, sand 568-70 ft, td 589 ft.

OLD WELL DEEPENED

Cooke County—Dodson-Inglehart & Russell's Rosson 2, otd 1131 ft, abnd 1764 ft.

WILDCAT STARTS

Archer County—Chas. E. Morrison et al's L. F. Wilson 1, 330 ft from w and 660 ft from s ATNCL 118, 4½ mi n Archer City, lcn 2500-ft test.

Clay County—Bridwell Oil Co.'s Roop 2, 728 ft from ne and 1700 ft from ne lines blk 10, Thornberry subdiv, lcn. W. R. Lyons and Webb-Taylor Drlg. Co.'s W. R. Lyons 1, 1650 ft from e and 330 ft from s lines blk 90, Byers subdiv, lcn. Seaberry & Duncan's G. H. Winfrey 1, 150 ft out s corner J. B. Ammerman sur A-1034, lcn.

Young County—C. T. Robertson et al's J. R. Suit 1, 330 ft out nwc TE&L 1591, lcn.

WEST CENTRAL TEXAS

COMPLETIONS

Comanche County: Wildcats—C. D. Lane et al's Adams 1, 660 ft from sw and nw lines J. C. D. Scott sur A-860, abnd 1500 ft. L. B. Tannehill et al's Terrill 1, 8083 ft from nw and 2700 ft from sw lines Swanson Yarberry sur A-1035, abnd 1142 ft.

Eastland County—Michigan-Ranger Oil Co.'s Brashear 3, Wm. Van Norman sur A-565, abnd 3450 ft. Minerals & Metals' Freyschlag & Graves 1, 467 ft out of swc Thos. Foster sur 22, A-130, flow 5 bbls oil and 310,000 gas, shot 30 qts 3040-60 ft and 90 qts 3160-3203 ft, td 3420 ft.

Jones County—Bailey Balken et al's Dunigan 1, sec e 40 ac of s 100 ac blk 89, DeWitt CSL, flow 233 bbls. 2-in, lime 2320-42 ft. Butler-Horne Drlg. Co.'s Wimmerly 4-A, sec w½ n½ Blk 87, DeWitt CSL, pump 211 bbls oil, plus 20% water, acid 2000 gals 2435-37 ft, td 2571 ft, pb to 2445 ft.

McCulloch County: Wildcat—Homer Easterwood et al's Johnson 1, 660 ft out of swc nw¼ A. Nevendorf sur 1355, trace oil 2044-54 ft, abnd Ellenburger 2336 ft.

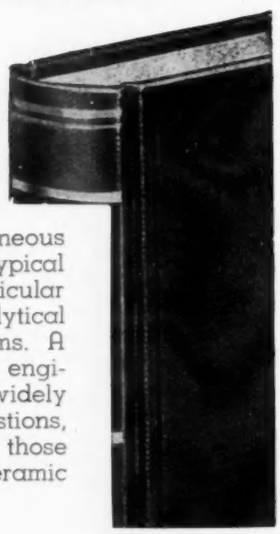
Taylor County—Dunnigan Bros. et al's Hunter 4, swc lot 13, W. D. Willis sur 122, pump 84 bbls, sand 2359-64 ft.

WILDCAT START

Jones County—Humble's Cook 1, c nw sw T&P 46, blk 18, sp.

The Flow of Homogeneous Fluids Through Porous Media

by M. MUSKAT
Chief of Physics Division,
Gulf Research & Development Co.



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East Texas

Opelika Outpost Test Shows for Production

Northeast outpost for Opelika field shows porosity at low level. First markers listed for Henderson County deep prospect. Bottom-hole pressure in East Texas field registers nominal decline.

Henderson County: Lone Star Gasoline Co. and Shamrock's Tullos 2, J. M. Eakin Survey, promises to expand gas-distillate production on northeast flank Opelika field, having logged first Pettit porosity at 8368 ft, and was coring at 8390 ft. The Texas Company's Brown 1, projected Trinity prospect, logged Pecan Chalk 2870-3100 ft, elevation 435 ft, and drilling shale 3420 ft.

Hawkins: S. H. Killingsworth et al's Green 2, northeast outpost and twin to a dry hole, flowed 85 bbls 21.8-gravity oil on 6-hour gauge through choke. Production from Woodbine perforations 4860-75 ft.

Moderate decline in reservoir pressure was credited to the East Texas field on the March 1 survey after recording a slump of 15.85 pounds on the February 1 reading. The average pressure, as indicated by key wells checked monthly by Texas Railroad Commission's engineers, dropped 1.86 pounds to 1007.87 pounds on March 1. The enforcement of extra production holidays during March along with the closing of wells making excessive water may result in a temporary gain in the bottom-hole pressure, according to observers. Owners of 65 wells on 29 leases that were producing 15,928 bbls water in making their daily oil allowable of 912 bbls have complied with the commission's order to discontinue operations, and produce the equivalent amount of oil from other wells on the same properties. This diversion plan went into effect March 1, and applies to wells making more than 100 bbls of water daily.

Southwest Texas

DeWitt County Well Has Wilcox Distillate

Tenth Wilcox sand strike recorded during past week.

DeWitt County: Adams Oil & Gas Co.'s Berch 1, Kimberling sur, 3 miles east of Yorktown, had Wilcox 7070 ft, drilled to 9153 ft, perforated 7208-12 ft with 16 shots, flowing est 150 bbls 63-gr condensate, 5/32-in ch, gas/oil ratio 14,000/1. Will make tests lower in sand. Opening field.

Aransas County: Continental's St. Charles 4, 4220 ft southeast of production, flowed 175 bbls 56-gr condensate, 5/32-in choke, 4200 lbs working pressure, perf in 9300-ft sand, total depth 9459 ft; second well in sand.

Bastrop County: Marts & Beaven's McWilliams 1, Glasscock sur, near Elgin, testing at 2390 ft in Austin chalk topped 2128 ft.

Bee County: T. B. Slick sold all holdings in South Caesar Carrizo sand field to Atlantic Refining Co., including 2400 ac leases, 1 6550-ft well, for cash plus ¼th overriding royalty and three-well drilling obligation; checking titles.

Jackson County: Gulf's Simons 1, 8000 ft southwest of Texana field, tested salt water in all sands, abnd 7815 ft. Magnolia's Gordin 15, North LaWard field, drilling below 7500 ft on deep test. Field's regular sand is 5200 ft.

LOWER GULF COAST COMPLETIONS

Bee County: Wildcat—Dirks Bros.' Dugat 1-B, J. Poitevent sur 1, 2 mi w Dirks field, abnd 3614 ft.

Jackson County: Ganado—Texas' Tunison 3, sec 9, 106.5 bbls 36.6-gr, ⅛-in ch, 675 lbs tp, cas sealed, gas/oil ratio 690/1, perf 6447-52 ft, sd 6447 ft, td 6717 ft.

Jackson County: Lolita — Cox & Hamon's Mitchell 1-A, S. F. Austin gr, 107 bbls ⅛-in ch, 600 lbs tp, 750 lbs cp, perf 5291-93 ft, td 5945 ft.

Jackson County: Maurbro—Humble's Gayle 2, A. M. Clare Lge, 432 bbls 25.2-gr, ¼-in ch, 600 lbs tp, 620 lbs cp, gas/oil ratio 270/1, perf 5208-12 ft, sand 5206 ft, td 5234 ft.

Jackson County: North LaWard—Humble's Four-Way 7, sec 6, 472 bbls, 25-2 gr, ¼-in ch, 500 lbs tp, 550 lbs cp, gas/oil ratio 241/1, sand 5202-30 ft, td 5230 ft. Magnolia's Gordin 16, sec 3, 103.8 bbls 25-gr, ¼-in ch, 100 lbs tp, 580 lbs cp, gas/oil rato 150/1, perf 5209-24 ft, sand 5205 ft, td 5225 ft.

Jim Wells County: Armagosa — Tris-Ess Corp.'s Dilworth 2, sec 88, 1 mi ne prod, 5000 gas ¼-in ch, perf 2350-58 ft, 5½-in cas 2388 ft, td 2393 ft.

Jim Wells County: Ben Bolt—Bridwell Oil Co.'s Smith 8, La Trinidad Gr, abnd 5640 ft.

Jim Wells County: Leandro — Henshaw Bros.' J. Koopman 1, 660 ft n & w lines e 80-ac 240-ac lse, sec 21, Plummer sub, San Diego gr, 5 mi se San Diego, 210 bbls 44.5 gr, 3/16-in ch, 300 lbs tp, 750 lbs cp, gas/oil ratio 480/1, perf 4414-20 ft, Frio 4412-26 ft, td 6016 ft. Opens field.

Jim Wells County: Orange Grove—Kilgore Dev. Inc.'s H. Koehn 2, tr 2, Casa Blanca gr, abnd 5111 ft.

Jim Wells County: Seeligson — Magnolia's Seeligson 28, Las Jarboncillas gr, 5555 ft n prod, abnd 7461 ft. Sun's P. Canales 1, sec 364, 114.99 bbls 43.6-gr, 7/64-in ch, 1225 lbs tp, 1200 lbs cp, gas/oil ratio 710/1, perf 5972-77 ft, sand 5941 ft, td 6001 ft.

Jim Wells County: Stratton—Chicago Corp's Wardner 38, sec 4, dual sand condensate well for recycling plant, perf 6570-6605 ft and 6640-6520 ft, td 6735 ft.

Live Oak County: Oakville — Hewitt, Dougherty & Reagan's Reagan 1, Coker sur, 71 bbls 20-gr, 3/16-in ch, 455 lbs tp, 750 lbs cp, perf 2735½-39½ ft, gas/oil ratio 2319/1, td 2940 ft.

Nueces County: Agua Dulce — Richardson Pet. Co.'s McCoy 10, sh 3, Palo Alto gr, 71.8-bbls 41.7-gr, 11/64-in ch, 150 lbs tp, 475 lbs cp, gas/oil ratio 1432/1, perf 6445-50, sd 6445-70 ft, td 7058 ft. Sam E. Wilson et al's S. A. Land Bank 1-B, blk 3, sec 8, condensate well for recycling plant, 2600 lbs equalized pressure, perf 6656-77 ft, td 7266 ft.

Nueces County: Minnie Bock—Clark & Cox' Robertson 4, sec 43, dual sand, 39.25 bbls 23.8-gr, ¼-in ch, 75 lbs wp, 60% sw, gas/oil ratio 524/1, perf 3786-92 ft, also gas well 520 lbs wp, perf 3652-58 ft. E. A. Graham's F. I. Gandy 1-C, sec 56, condensate, 2100 lbs wp, perf 5512-56 ft, td 5972 ft.

Nueces County: Stratton — Chicago Corp.'s Wardner 34, sec 5, condensate well for recycling plant, perf 6598-6666 ft, td 6726 ft.

San Patricio County: Midway — Phillips' Smith 1, sec 72, 105.1 bbls 43.2-gr, ⅛-in ch, 775 lbs tp, 1650 lbs cp, gas/oil ratio 923/1, perf 6261-64 ft, sand 6250 ft, td 6330 ft.

San Patricio County: Odem — Seaboard's Bomer 4, blk 4-A, 119 bbls 33.1-gr, ⅛-in ch, 750 lbs tp, 1325 lbs cp, gas/oil ratio 537/1, perf 5303-7 ft, sand 5299 ft, td 5308 ft.

Victoria County: E. Placedo—W. L. Goldston's West 4, E. Benavides gr, 110.16 bbls 39.3-gr, 3/32-in ch, 950 lbs tp, 1900 lbs cp, gas/oil ratio 550/1, perf 6868-70 ft, sand 6860 ft, td 6920 ft.

Victoria County: Wildcat — Continental's Welder 1, S. A. Belding sur, on Nursery prospect, abnd 6525 ft.

WILDCAT STARTS

Jackson County—Gulfboard et al's Harmon 1, 464 ft s, thence 939 ft e of westerly nw cor Kountz sur No. 23, 1 mi se Ganado field, lcn 6500-ft test.

Live Oak County—Henderson Coquat et al's Riser 1, 467 ft nw and sw lines ne 80-ac of 483-ac tr, Edwardo Ramirez gr, 1½ mi sw Mikeska, lcn 8000-ft Wilcox test.

Nueces County—L. A. Douglas & Republic Nat'l Gas Co.'s Allen 1, 661 ft s and w lines 110.64-ac tr, J. H. Smith sur, 2 mi sw Clarkwood. Morgan, Wynne & Morgan's O. L. Gerdes 1, 660 ft n and w lines of tr, sec 7, R&W sub, 2 mi sw Shield field, lcn 7200 ft test.

Victoria County—Continental's Crain 1, 990 ft sw, 3630 ft nw lines J. Smally sur, 9 mi e Nursery, lcn 6500-ft test.

SOUTHWEST TEXAS COMPLETIONS

Duval County: Driscoll — Continental's R. Driscoll 6-B, sec 484, 4500 ft se prod, 167.5 bbls ¼-in ch, 225 lbs tp, 450 lbs cp, perf 2945-82 ft, sand 2945 ft, td 4007 ft.

Duval County: Kreis—Highland Oil Co.'s F. J. Dee 1, sec 515, n outpost, sand 3330-40 ft, abnd 3372 ft.

Jim Hogg County: Colorado — Humble's King-Colorado 59-B, Las Moretas gr, 172.5 bbls 46.4-gr, 3/16-in ch, 200 lbs tp, 625 lbs cp, gas/oil ratio 210/1, sand 3003 ft, td 3012 ft.

Starr County: Rincon—Continental's Slick 115-A, sec 231, 214 bbls 40.5-gr, 12/64-in ch,

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Starr County: New Field Discovery—Sun's Garcia L&L Co. 1-A, 660 ft w, 40284 ft n lines Por 97, 13 mi e Rio Grande City, 195.96 bbls 43.8-gr, 5/32-in ch, 675 lbs tp, 835 lbs cp, gas/oil ratio 512/1, perf 3748-53 ft, dr to 4075 ft, sd/tr dr to 3754 ft, Frio 3748-54 ft, td 4075 ft. New field.

Starr County: Wildcat—L. H. Wentz's S. Gonzales 1, Por 105, 11 mi nw Rio Grande City, abnd 2623 ft.

Webb County: McLean—Magnolia's McLean 3, sec 121, 1867 ft sw prod, abnd 3396 ft.

Webb County: Wildcats—W. W. Anderson's Bruni 1, blk 85, Killam Sub Borrego gr, 7 mi s Aguilares, abnd 2013 ft. O. W. Killam's S. Benavides 1, sec 2254, 4 mi ne Oilton, abnd 3575 ft.

WILDCAT STARTS

Duval County—W. C. McBride's Murphy 1, 660 ft n and e lines sw sec 110, 1 mi nw Labbe field, dr below 1500 ft on 3000-ft contract. Guy I. Warren et al's Clara Driscoll 1, 3630 ft w and 1980 ft n lines of Palo Blanquita gr, 4 mi nw Realitos, lcn 4200-ft test .

Jim Hogg County—M. L. Massingill et al's R. Hinnant 1, 330 ft n and e lines lot 24, Hinnant sub, Sh 1, Las Animas gr, 1 mi se Glen field, sp 3500-ft test. E. M. Jones' Hellen 1, 4290 ft n l, 2310 ft s l, 990 ft w l 1040-ac lse, sec 50, 4 mi ne Randado, lcn 3500-ft test.

SOUTH CENTRAL TEXAS COMPLETION

Wilson County: Wildcat—H. A. Suttle et al's B. B. Hardy 1, J. Reynolds sur, sur cas collapsed, could not clear hole, junked 4841 ft.

WILDCAT START

Wilson County—H. A. Suttle et al's B. B. Hardy 1-A, 150 ft w No. 1, junked hole, J. Reynolds sur, 6 mi ne Floresville, ru for 5300-ft test.

Texas Gulf Coast

Production Test Due In Esperson Wildcat

Pipe set to test sands in wildcat in Esperson area, Harris County; two wells indicate north and east extensions to Lake Creek, Montgomery County; new sand producer at Needville running gauge; discovery well at Aldine continues tests.

Harris County: Oil or distillate production is indicated in a wildcat west of Esperson field with Atlantic Refining Co. cementing production pipe at 9156 ft in Cohn 1. Several sands showed up on electrical survey, the deepest being in top of Cook Mountain at 9028-52 ft. First test will be made in this horizon. This wildcat blew out at 8820 ft, spraying gas and mud for several hours. Three sands above 8500 ft were indicated on the survey. It is thought the well has 5 sands all of which probably will be tested. Total depth is 9505 ft.

George W. Strake and Cash & Reynolds are conducting more production tests in Phenix 1, discovery of new field in Aldine area, north Harris County. With perforations made at 7186-93 ft, the well has been flowing about 50 percent oil, 43- to 46-gr, depending on choke, and 50 percent salt water. The well is thought to be on a different structure from the single producer in the old Aldine field, discovered in 1939.

Montgomery County: Superior Oil Co. is drilling deeper, possibly to 13,000 ft, in South Texas Development 1, east side of Lake Creek field. The well is the second deepest in the field at 12,094 ft, picking up sands that correlate normal with McWhorter 1-A, 13,330 ft, deepest well in the field and also on the Upper Gulf Coast. The South Texas 1 may be drilled to the 13,000-ft level.

On the north side of the field, Superior is testing McWhorter 3-A, all in Wilcox sands. Last perforations at 9240-50 ft produced salt water. Several more horizons will be tested. Total depth is 10,499 ft, casing cemented at 9873 ft.

Fort Bend County: Walter L. Goldston is running potential gauge in Lehman 1, west extension producer and opener of new sand in the new Needville field. Perforated at 5181-87 ft for a drill-stem test, the well flowed into pits through small choke, thus establishing Marginulina sand production 200 ft lower than the discovery well.

Waller County: Stanolind has projected a semi-wildcat on the southeast side of the Katy field, first of 8 gas wells to be drilled under the program for a recycling plant. A high priority rating was granted for this project earlier in the year. The well is Francis Young 2, T. S. Reese sur, 3930 ft southeast of nearest well.

COMPLETIONS

Fort Bend County: Clodine—Houston Oil Co.'s Thompson 4, 1395 ft w of w l John Brock sur, perf 7512-14, 7504-06 ft, oil & salt water, reperf 7505-07 ft, flow 112 bbls, ¼-in chk, tp 800, cp 2700, sand 7462 ft, gr 45.9, gor 6865/1, td 7535 ft.

Jefferson County: Stowell—Glenn McCarthy, Brown & Wheeler's Englin 1, 660 ft s & w ne cor sec 158, ½-mi n discovery, perf in 8446 ft sand, flow 174 bbls 51-gr dist, ¼-in chk, gor 28,700/1, tp 2975, cp 3100, td 9263 ft.

Jefferson County: Wildcat—Harry L. Edwards Drilling Co.'s (Was Earl C. Hankamer) Robertson 1, Hamshire area, 660 ft fr w l & 660 ft fr s l 160-ac tr F. Valmore sur, abnd 9090 ft.

Jefferson County: Lovell's Lake—Phillips' Hillebrandt Bayou-State 2, 219 ft w alg s l A. O. Donnell sur fr w bank Hillebrandt Bayou, perf 7714-16 ft, tested high gor, squeezed & reperf 7790-94 ft, flow 131 bbls ⅛-in chk, tp 980, gr 38.4, gor 716/1, td 7845 ft.

Matagorda County: North Markham—Ohio Oil Co.'s Carlson 16, 2968 ft sw of ne l & 2251 ft nw of se l IGN 10, perf 7728-33 ft, flow 213 bbls, ⅛-in chk, tp 1175, cp 1275, gor 402/1, td 8125 ft.

Matagorda County: Markham — Hamill & Hamill's Smith 1, 800 ft fr n l & 1200 ft fr e l lse, abnd 2557 ft.

Matagorda County: Bay City — Skelly's Moore 10, 525 ft fr se l & 467 ft fr ne l lse, perf 7025-35 ft, flow 126 bbls ⅛-in chk, tp 1050, cp 1450, td 8523 ft.

Montgomery County: Lake Creek — Stanolind & Amerada's McWhorter 2, 1168 ft fr n l & 467 ft e l 250-ac tr, T. J. Nichols sur, perf 9732-56 ft, flow 216 bbls 3/16-in chk, tp 550 cp 1300, td 10,006 ft.

Tyler County: Camp Eleven—American Republics' Fee 2, 575 ft fr w l & 660 ft fr n l bbls, ¼-in chk, tp 1300, cp 1550, td 8008 ft. Theo Cushing sur, perf 7998-8007 ft, flow 571

Wharton County: Wildcat—Clark & Cowden's Kountze 1, 2 mi ne Danevang, c sw nw ETRR 85, abnd 6510 ft.

Wharton County: Withers — Texas Co.'s Pierce Est. C-116, 2241 ft fr swl & 5525 ft fr sel C lse, John Caldwell sur, abnd 5570 ft. F. W. Michaux's Pierce Est. A-55, 1866 ft s 62 deg w of 65-A, C. Howard sur, perf 5330-43 ft, flow 155 bbls, 5/32-in chk, tp 550, cp 650, td 5370 ft; Pierce Est. 72-A, 933 ft s 62 deg w 67-A, Howard sur, flow 152 bbls, 10/64-in chk, tp 475, cp 700, td 5376 ft; Pierce Est. 75-A, 933 ft n 62 deg e 42-A, perf 5336-44 ft, flow 165 bbls, 10/64-in chk, tp 475, cp 475, td 5370 ft.

WILDCAT STARTS

Brazoria County—H. A. Potter's Bryan 1, Bryan Mound area, C. Ariola sur, 1750 ft fr e & 200 ft n of ne cor S. F. Austin sur, A-35, lcn 4000-ft test.

Brazos County—Phillips' Jericho 1, Millican area, 660 ft fr nl & 660 ft fr wl 77-ac lse, E. M. Millican sur, lcn 8000-ft test.

Fort Bend County — Mackhank Petroleum Corp.'s Moore 1, 4175 ft fr nl & 660 ft fr wl Jesse Vance sur, lcn 8000-ft test. Roxie Wright, cont.

Fort Bend County—Magnolia's Huntington 2, 660 ft fr n & w lines 520-ac tr Henry Scott sur, lcn 8750-ft test.

Fort Bend County—Tide Water's Armstrong 2, 660 ft fr nel & 315 ft fr nwl James Scott Lge 3, lcn 6500-ft test.

Louisiana Gulf Coast

Atlantic Testing New Deep Sands at Bayou Sale

Test deeper sand possibilities at Bayou Sale, St. Mary Parish. Complete wildcat in Jefferson Davis Parish as gas producer. East White Lake well making dual completion.

St. Mary Parish: Atlantic Refining Co. is testing deeper sands in Bayou Sale field with St. Mary Parish Land Co. 2

perforated at 12,340-48 ft, 2000 ft below the regular producing horizon. Although production has not been definitely established at this level, the sand section indicated sufficient thickness on electrical survey to make a producer. Atlantic has 2 other wells drilling, Humble 2.

Jefferson Davis Parish: Cities Service has completed Lacassine Land Co. 1 to establish the Thornwell prospect as a gas and distillate field. Operators have been testing the wildcat at several deep levels, all yielding gas and distillate, no oil. Last perforations were made at 96-38-44 ft with 18 holes, flowing gas, gas-oil ratio being 53,000/1.

Vermilion Parish: Union Oil Co. is attempting dual completion in Vermilion 3-A, East White Lake field, in two shallow sand sections at 5950-80 ft and 6415-21 ft, both sands being considerably higher than the regular field sands. On a flow test in the later set of perforations the well flowed 22 barrels in 2 hours with 1200 pounds pressure on the tubing. Screen and liner were run for the completion.

COMPLETIONS

Arcadia Parish: Jennings — Stanolind's Crowley 122, 3012 ft se alg s l fr sw cor sec 48, thence 2636 ft ne at ra in 48-9s-2w, perf 7620-50 ft, flow 414 bbls, 3/16-in chk, tp 1300, cp 1300, td 7703 ft.

LaFourche Parish: Delta Farms—California Co.'s Louisiana Delta Farms 3, begin nw cor 6-17s-23e, go 2650 ft e, thence 630 ft s & 1000 ft e to lcn in 6-17s-23e, perf 8929-34 ft, flow 108 bbls, ¼-in chk, tp 2850, gor 6300/1, gr 39.4, td 10,067 ft.

St. Charles Parish: Paradis—Texas Co.'s LLE-Paradis 19, 660 ft s, 560 e nw cor se 7-14s-20e, perf 10,003-030 ft, flow 551 bbls, 3/16-in chk, td 10,490 ft.

St. Martin Parish: Lake Chicot—Amerada's Schwing-Case 1, 660 ft s & e nw c 31-11s-10e, perf 10,340-344 ft, flow 157 bbls, 10/64-in chk, tp 3200 ft, gr 35.8; opens new deep sand, td 11,620 ft.

St. Mary Parish: Bayou Sale — Humble's Marin 3, 1270 ft sw fr n cor sec alg nw l sec 16, thence 250 ft se at ra in 16-16s-9e, perf 10,160-174 ft, flow 289 bbls 9/64-in chk, tp 1950, td 10,515 ft.

St. Mary Parish: Charenton — Fifteen Oil Co.'s South Coast Corp. 2, 1290 ft s, 543 e nw c ne 31-13s-10e, perf 9232-40 ft, flow 245 bbls 5/32-in chk, tp 1000, gr 34, opens new deep sand, td 10,032 ft.

Terrebonne Parish: Lirette—Humble's Ellender 3, c sw nw 23-19s-19e, perf 8463-66 ft, 8360-63 ft, gas well, shut-in; td 11,524 ft.

WILDCAT START

Rapides Parish—Phillips' Belgrade 1, Big Island area, 660 ft s & w ne c ne nw 14-4n-3e, lcn.

North Louisiana

Concordia Wildcat Shows Small Producer

Deepest test in area goes to 12,592 ft and plugs back; second test at Sandy Bayou is failure; Lisbon to get 9000-ft test; Concordia wildcat shows for small producer.

North Lisbon: Union Producing Co.'s McDonald 1, C SW 13-21n-5w, Claiborne Parish, drilled to 12,592 ft, ran drill-stem to bottom from casing seat at 11,872 ft, which showed only 400,000 cubic ft of gas daily, and plugged for testing Smackover lime horizon at 11,872 ft.

Sandy Bayou: Carter Oil Co.'s Tensas Delta D-2, SW SE 25-6n-3e, second test in this field, abandoned 5792 ft; first test was small oil well in Wilcox.

Lisbon: Third 9000-ft Lower Marine test will be drilled by Big West Drilling Co. in Section 34-21n-5w, Claiborne Parish. It is north of J. D. Carruthers' distillate producer that opened Lower Marine production at the 9000-ft level.

Concordia Parish: California Co.'s Pan-American 1, NW 16-9n-10e, Concordia Parish wildcat, which had casing perforated at 4565-75 ft, and flowed ½ bbl of oil per hour, has increased to 40 bbls of oil daily. Bottom is 6458 ft; elev 71 ft. Magnolia Petroleum Co. took a wildcat block bordering the Mississippi River in township 8 north, range 10 east. Carter Oil Co. took 3720 acres around Section 36-11n-9e, Tensas Parish.

COMPLETIONS

LaSalle Parish: Sandy Bayou—Carter's Tensas Delta D-2, sw se 35-6n-3e, abnd 5792 ft.

Lincoln Parish: Wildcat—Carter's Green 1, sw ne 2-17n-3w, abnd 6878 ft.

WILDCAT START

Bossier Parish—Oscar Donley's Howell 1, 1160 s 660 e nwc 4-18n-11w, rig.

Arkansas

Seventh Oil Completion Reported for Midway

One new producer, three locations at Midway; twenty locations in Macedonia and Dorcheat wait on OPC; third well at Mount Holly small oil producer.

Midway: Three locations were staked by Barnsdall Oil Co. One producer completed extending production slightly southeast and into Section 14-15-24. It is the field's seventh producer.

Barnsdall's Edgar Bond 2, Section 11-15-24, after swabbing and flowing by heads ceased to flow and operators prepared to acidize.

Macedonia and Dorcheat: Twenty locations at Dorcheat and Macedonia in Columbia County, both classed as gas-distillate fields, awaited permission from OPC. All have been recommended by the Arkansas Oil and Gas Commission.

Mount Holly: Atlantic Refining Co.'s Hughes 1, C NE 9-17-18, Union County, third in field, flowing six barrels oil per hour, ¼-in choke, tubing pressure 850; gas-oil ratio 1070 to 1. New well northwest offset to discovery and next in series will be to southeast of discovery well. Axis of production is southeast-northwest.

Ouachita County: Dubin Bond is building derrick in 6-15-18 for test to Travis Peak or continue to Smackover lime.

COMPLETIONS

Lafayette County: Midway — Barnsdall's Beck 1, nw ne 14-15-24, flow 30 bbls hour, ¼-in ch, tp 500 lbs, td 6439 ft.

Union County: Mount Holly — Atlantic's Hughes 1, c ne 9-17-18, flow 6 bbls hour ¼-in ch, tp 850, gor 1070/1, td 7249 ft.

Mississippi

Five-Well Program Starts In South Mississippi

Humble has five-well wildcat program in South Mississippi; wildcat planned in Issaquena County; Alabama wildcat shows fresh water in test.

Tinsley Dome: Half mile east of production, Charles Perkins and associates plan early 6500-ft Tuscaloosa test in NW SE 32-10n-2w. Only a few north edge wells produce from this horizon and they are small.

South Mississippi: Humble Oil & Refining Co. reported to have five-well wildcat program on Dantzler Lumber Co. land. First of tests, Dantzler 1, SE

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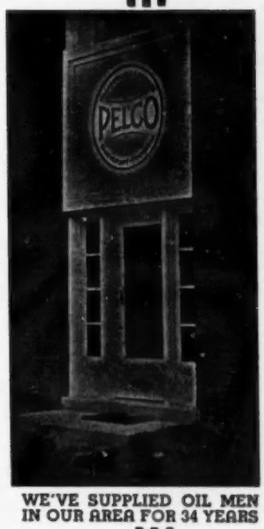
Business never was as much fun as it is now — or less profitable. We crawl out before noon, chide the chickens about failure to observe war time, and hurry to the job with a gleam in our eyes indicating a certain perverse enjoyment of the complex problem of serving customers satisfactorily. Since Uncle Sam now needs all of a lot of stuff heretofore held in too little esteem, that "serving customers satisfactorily" business puts a bit of a premium on a supply man's ingenuity. Maybe we're bragging. At any rate — try PELCO first. You can't blame guys for tryin' when it's been their habit for 34 years.



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NE 33-4s-11w, Harrison County, drilling below 4500 ft.

Issaquena County: Press Cochrane of Jackson has leased 7000 acres of Anderson-Tulley Lumber Co. land for wildcat to start by June 5, tentative location being NW SW 17-17n-3e, to 6500 ft.

Alabama: Reid Clarke and associates' McWilliams 1, NE NW SW 9-11n-10e, Wilcox County, that reported gas show in Eutaw, topped at 1556 ft (elevation 428) showed 100 ft of drilling mud and fresh water in 14-minute drill-stem test at 1551-79 ft and is shut down at 1685 feet.

COMPLETIONS

Scott County: Wildcat—Carter's Newell Mineral Lease Co. 1, c nw se 32-8n-7e, elev 435 ft, Tallahatta 940, Wilcox 1210, Midway 3245, chalk 3901, Eutaw 5203, abnd 5913 ft.

Yazoo County: Tinsley Dome—Frankel Bros.' Martin 6, nw sw se 1-9n-3w, elev 342 ft, Midway 4062, chalk 4906, pump 15 bbls hr, 4976 ft. Roeser & Pendleton's Fears 1, ne nw ne 12-9n-3w, elev 333 ft, Midway 4106, Selma 4976, Woodruff 5051, Eutaw 5244, Perry 5404-54; no Stevens or McGraw sands, Tuscaloosa 6005, abnd 6205 ft.

WILDCAT STARTS

Tippah County—Paul Thompson's Martindale 1, 1860 ft w, 536 n sec 27-1s-3w, sd 466 ft.

Wilkinson County — Danciger O&R Co.'s Crosby 1, c sw sw 10-3n-1e, lcn.

California

Small Heavy Oil Well, Three Failures Completed

Extension test Helm area Fresno County encounters salt water; two Kern County tests being abandoned and third completed for a small producer of heavy oil.

Fresno County: General Petroleum Corp.'s Esperoad 75-33, 33-16-17, Helm area, bottomed 8266 ft recovered 2300 ft salt water on drill-stem test and is being abandoned. Kreyenhagen was topped at 7621 ft, Eocene at 8005 ft.

Kern County: Dyer Creek Oil Co. is abandoning Church 1, 2-26-27, Dyer Creek area, which drilled to 2612 ft in gray sand and failed to encounter showings of importance.

Union Oil Co. has abandoned Glide 1-7, Mount Poso area, 7-27-28, after finding Vedder zone wet. Bottom 2884 ft in gray sand and shells.

H. C. Morton has completed Core Holl 1 wildcat in 30-26-19, Shale Hills area, as a pumper making 55 bbls 13-gr oil from plugged bottom of 1000 ft. Total depth was 2208 ft. Operator is preparing to drill a second well one location north.

COMPLETIONS

Kern County: Coles Levee—Richfield's KCL-B, 61-31, 336 ft s 1654 w ne c 31-30-25, flow 789 bbls 34.1-gr, 2-1½-in beans, 100/800 lbs, 690 ft, perf 9044 ft, td 9050 ft.

Kern County: Dyer Creek—Shell's Smith Cairns 3, 1268 ft n 1700 ft w se c 11-26-27, Vedder 2307 ft, abnd 2439 ft.

Kern County: Mount Poso — Signal Petroleum Co.'s Loudon 1, 330 ft n 330 w se cor sw nw 32-26-28, Vedder 1796 ft, abnd 1873 ft. Union's S&M 31, 990 ft s 463 e w¼ cor 4-27-28, pump 51 bbls 15.8-gr, 82 ft perf 1815 ft, td 1816 ft.

Kern County: Devil's Den—Etienne Lang's Occidental 1, 1330 ft n 1330 e sw cor 30-26-19, pump 45 bbls 13.5-gr, 152 ft perf 1000 ft, Belridge 64 zone 848 ft, Tumey shale 1000 ft, td 2208 ft, pd 1000 ft, new pool.

Kern County: Paloma—Ohio's KCL A-10-41-4, 330 ft s 2307 e ne cor 4-32-26, flow 240 bbls 36.5-gr, 12/64-in bean, 950/1350 lbs, 201 ft perf 10,239 ft, td 10,241 ft, top oil sand 10,005 ft.

Los Angeles County: Newhall—C. G. Willis & Associates, Ferguson 1, 750 ft s 350 e c 36-4-17, flow 225 bbls 34-gr, ½-in bean, 170/0 lbs, 140 ft perf 7020 ft, td 7519 ft, Miocene 6400 ft, top 1st zone 6700 ft, 3rd zone sand 7220-7360 ft. New field.

Los Angeles County: Wilmington—Essanay Oil Co.'s Shaw 1, 150 ft s 125 w c I L & Neptune, pump 140 bbls 16-gr, cut 40%, 423 ft perf 3740 ft, td 3740 ft. Silver Petroleum Co.'s Stone 5, 564 ft s 240 e Figueroa & Q, pump 125 bbls 14-gr, perf 3165-3250, 3515-3645 ft, td 3645 ft.

Orange County: Anaheim — Texas Co.'s Spencer 1, 1271 ft s 336 w ne cor 1-4-11, flow 97 bbls 21.2-gr, 3.2% cut, ½-in bean, perf 8900-8932 ft, Repetto 7800 ft, td 9660 ft, pd 8960 ft; new pool.

Orange County: Huntington Beach—H. S. Kohlbush's Pac. Am. 9, 45 ft n 702 e Ellis & Edwards, pump 140 bbls 24-gr, 5% cut, perf 3805-3825 ft, td 4544 ft.

OLD WELLS RECONDITIONED

Los Angeles County: Wilmington—Wm. A Kirk's Exeter 1, 130 ft n 151 e L & Lagoon, pump 90 bbls 16-gr, 30% cut, 735 ft perf 3713 ft, td 3714 ft. Royalty Service Corp.'s Oilar 1, 164 ft s 165 w sw cor J & Banning, no est, otd 3625 ft, Redrilled 3585 ft, 965 ft perf 3581 ft.

WILDCAT STARTS

Los Angeles County—Texas Co.'s McNally A-2, 15-3-11, lcn, LaMirada area.

Sonoma County — Standard's Petaluma Comm. 3-1, 14-5-7, Lcn, Petaluma area.

NOTICE IS HEREBY GIVEN that there will be a meeting of the State Mineral Lease Commission of Mississippi in the office of the Governor at the State Capitol in Jackson, at 10:00 o'clock, a. m., April 20, 1942.

The purpose of this meeting is to receive written bids or proposals for the leasing for oil and gas development of the area on the southern coast of this State known and referred to generally as the Mississippi Sound. It is estimated that this area involves approximately 600,000 acres. The property may be leased as a whole or in parts. The Commission is primarily interested in proposals offering prompt and systematic development of said property for oil and gas development.

This March 16, 1942.

STATE MINERAL LEASE COMMISSION

By Greek L. Rice,
Secretary.

Michigan

Lake County Oil Strike Promises Drill Campaign

First 1942 new field prospect promises drilling campaign in Lake County; deep test in Arenac County indicates new horizon for field.

Wildcats: W. P. Shoemaker's Matson 1, NE SE NW 16-19n-14w, Sauble Township, Lake County, shut in for 7 days after drilling pay zone at 2114 ft, flowed 186 bbls oil first 19 hrs, and continued to flow by heads averaging 206 bbls day first 4 days. Well is flowing with 726 ft of 8-in csg and 310 ft 10-in only pipe in hole. Production is from Traverse limestone, logged between 2075 and 2111 ft and drilling halted estimated 1 foot in pay. Oil is 36-gr and was posted at $1.41 or 2 cents over Reed City grade and 4 cents under Grand Rapids grade crude; outlet is truck.

This wildcat, first completed commercially this year in Michigan. It is a trend discovery and followed four other shallow tests. It is 28 miles northwest of Reed City and probably on same structure. Virtually all acreage given immediate promise by strike is under lease to small concerns.

Sumpter Oil & Gas Co.'s DeRoy 1, S½ SW SE 22-4s-8e, Wayne County, a wildcat, originally spudded in October, 1940, and under test at 2564 ft since last fall, is pumping 30 bbls oil and 100 bbls water from Trenton lime. Operators reported water exhausting after fifth day on pump. It may complete as first oil well in Wayne County.

Adams Field: Ervin Major's Adams 1, NE NE NE 36-19n-3e, Arenac County, flowing and swabbing 20 to 38 bbls oil day from Monroe lime at 4207-22 ft. Test is 3 miles southeast of a 4300-ft Monroe well, averaging 18 bbls day past four months. Casing will be reset and the well tested for production in the present horizon.

COMPLETIONS

Allegan County: Trowbridge—John Burton's Waterman 2, ne se ne 31-1n-13w, drilled Traverse lime 1342-55 ft, pump 65 bbls after acid, td 1355 ft.

Lake County: Wildcat—W. P. Shoemaker's Matson 1, ne se nw 16-19n-14w, Traverse 2090 ft, flow 186 bbls 36-gr oil 19 hrs open, td 2114 ft; new field.

Genesee County: Wildcat—J. C. Glavin's Smith 1, ne se sw 5-9n-8e, Traverse 1900 ft, Dundee 2369 ft, abnd 3105 ft.

Osceola County: Reed City—Pure's Vincent 1, n½ se ne 6-17n-10w, Monroe pay 3515-17 ft, swabbed 126 bbls first 24 hrs, td 3630 ft.

Ottawa County: Wildcat—W. S. Cook's Weener 1, s½ sw nw 22-6n-15w, Traverse 1630 ft, abnd 1692 ft.

Roscommon County: Headquarters—Mogul Development Co.'s State B1, n½ sw ne 33-21n-3w, Traverse 3222-33 ft, flow 289 bbls 26 hrs, td 3236 ft.

Livingston County: Wildcat—Fisher-McCall Oil & Gas' Hibner 1, c sw ne 14-3n-6e, Dundee 1390 ft, abnd 1768 ft.

WILDCAT STARTS

Clare County—Sun's State A1, c s½ nw nw 6-19n-5w, lcn.

Gratiot County—Rex Oil & Gas Co.'s Grover 1, c nw sw 13-12n-4w, rig.

Kent County—Gordon Oil Co.'s Cook 1, se ne se 1-7n-11w, rig.

Missaukee County—Sun's Horner 1, s½ sw sw 11-24n-5w, dr.

Osceola County—Sun's Arndt 1, s½ sw sw 23-18n-8w, rig.

Ottawa County—D. M. Leonard's Nykamp 1, se sw se 30-5n-14w, lcn.

Eastern States

NEW YORK
COMPLETIONS

Allegany County—Walter J. McEuroe, Hoover farm, Bolivar, 8 bbls, Richburg, 1441 ft. V. V. V. Franchot, Murphy farm, Bolivar, 7 bbls, Richburg, 1339 ft. Producers Oil Corp., Keller-Scott farm, Wirt, 9 bbls, Richburg, 1074 ft. Ebenezer Oil Co., Vincent farm, Scio, 7 bbls, Richburg, 1072 ft. I. B. Lawrence, Mills lot, Alma, 6 bbls, Richburg, 1039 ft. Gigee & Tullar, Gigee farm, Alma, 9 bbls, Richburg, 1416 ft. Pure Penn Oil Co., Hill farm, Alma, 5 bbls, Richburg, 1256 ft. J. P. Herrick, David Howe farm, Bolivar, 7 bbls, Richburg, 1385 ft. L. H. Thornton et al, Smith farm, Willing, 8 bbls, Fords Brook, 1273 ft. Sloan & Zook, Green farm, Genesee, 5 bbls, Richburg, 1347 ft. Messer Oil Co., Koehler form, Clarksville, 7 bbls, Richburg 1373 ft. Gray Oil Co., Smith farm, Genesee, 7 bbls, Richburg, 1415 ft.

INTAKE WELLS

Allegany County—Messer Oil Co., Vosburg farm, Bolivar, Richburg, 1371 ft. Bradley Prod. Corp., Bascom farm, Alma, Richburg, 1267 ft. South Bolivar Oil Co., McKelvey farm, Bolivar, Richburg, 1070 ft. Hickory Grove Oil Co., Beers farm, Bolivar, Richburg 1410 ft. Ebenezer Oil Co., Vincent farm, Scio, Richburg, 1072 ft. Curt Oil Co., Williams farm, Bolivar, Richburg, 1387 ft. George Oil Co., Scott farm, Alma, Richburg, 1342 ft. Bradley Prod. Corp., Fitz-Carroll farm, Bolivar, Richburg, 1361 ft. P. J. Shaughnessy et al, Daley farm, Alma, Fords Brook, 1318 ft. Bliven Hill Oil Co., McEwen-Norton farm, Amity, Scio, 979 ft.

OHIO
COMPLETIONS

Ashland County—Frank Lyons, McClure 8, 1.15 gas, 2826 ft.
Athens County—Ohio Fuel, Cunningham 1, 0.2 gas, 1427 ft.
Coshocton County—Clive Davis et al, George 1, gas, 3147 ft.
Jackson County—F. G. Green, Fee 1, 0.02 gas, 365 ft.
Knox County—Upham & Ridgeway, Bailey 1, 40 bbls, 2735 ft.
Licking County—Ohio Fuel, Fromholz 1, 0.02 gas, 2486 ft.
Meigs County—Keener, Taylor et al, Byron 1, 0.2 gas, 529 ft. H. B. Welker Co., Griffith 1, 4 bbls, 1755 ft.
Morgan County—Strum Co., McLaughlin 2, 0.3 gas, 4276 ft.
Muskingum County—Sutton Bros., Busomer 3, 2.5 gas, 4043 ft.
Noble County—B. C. Robinson et al, Walker 14, 1 bbl, 1038 ft.
Tuscarawas County—Nat. Gas of W. Va., Lebold 1, 0.4 gas, 4530 ft.
Washington County—Bom Oil Co., Templeton 1, 1 bbl, 2065 ft. Schneider Oil Co. Haynes 22, abnd, 1445 ft. Wittmer Co., Ferrell 1, 0.6 gas, 4107 ft.

PENNSYLVANIA
COMPLETIONS

Armstrong County—Scholl et al, Becker 1, 0.01 gas, 3443 ft.
Butler County—Larkin et al, Larkin 1, abnd, 1500 ft.
Fayette County—Duquesne, Newcomer 1, 0.08 gas, 2711 ft. Peoples' Baer 1, 1.0 gas, 3520 ft.
Greene County—D. A. Null et al, Gillespie 1, 0.04 gas, 2819 ft. Carnegie, Johnson 1, 0.13 gas, 3275 ft.
Washington County—Equitable, Leyda 1, abnd, 3701 ft.
Westmoreland County—C. B. Carnahan, Peoples 1, 0.34 gas, 3044 ft.

WEST VIRGINIA
COMPLETIONS

Boone County—South Penn's Yawkey-Freeman 65, 0.25 gas, 2338 ft.
Cabell County—G. W. Keller, trustee, York heirs 1, 0.05 gas, 3309 ft.
Calhoun County—Godfrey L. Cabot, Inc., Hardman 13, 0.41 gas, 2214 ft. Hagan T. Francis, stump 1, 5 bbls, 1940 ft.
Jackson County—Columbia Carbon Co., Silket 1, 2.02 gas, 5161 ft. Spartan Gas Co., Carney 1, 3.45 gas, 5123 ft.
Kanawha County—Columbian Carbon Co., Taylor 1, 2.72 gas, 5209 ft.
Lincoln County—R. H. Adkins, Hill 1, 0.06 gas, 4084 ft.
Pleasants County—A. F. Marple, Bell 6, abnd 941 ft.
Putnam County—Winn Gas Co., Johnson 2, 0.17 gas, 2091 ft. Reishman Oil & Gas Co., Arbough & Zerkle 1, 178 gas, 4386 ft. Massey O. & G. Co.'s Carpenter 1, 0.16 gas, 2075 ft.
Ritchie County—W. H. Bickel, McCosh 1, 0.54 gas, 1665 ft.
Wetzel County—A. G. Isiminger, Blatt 2, abnd 1490 ft.
Wood County—Grant Farm Oil Co., Grant 9, 10 bbls, 2216 ft.

OLD WELLS DRILLED DEEPER

Lincoln County—Kanawha Gas & Utilities Co., Chandler 1, 0.62 gas, 3509 ft. Vernon Gas Co., Adkins 3, 0.09 gas, 3630 ft.

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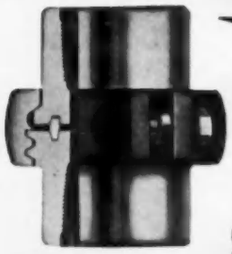

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Men In The Industry's News

R. M. CHAN, comptroller for Magnolia Petroleum Company the past 7 years, has been elected a member of the board of directors and also an assistant vice president, according to D. A. Little, president. E. C. Seymour, an employe for more than 20 years and an assistant to Chan, has been appointed comptroller. No other changes were made in the executive personnel. The board chairmanship, vacant since the death of E. R. Brown on January 25, will remain unfilled as tribute to the company's founder.

Chan is a native of Wilkes Barre, Pa., and was raised in New York City. Upon conclusion of overseas military service during World War I, he became affiliated with financial institutions. In 1929 he was elected a director and vice president of the Vacuum Investing Corporation, a unit of Vacuum Oil Company, which was merged along with Standard Oil Company of New York into Socony-Vacuum Oil Company in July, 1931. Chan was retained in an executive capacity, and in 1935 was transferred to the Dallas headquarters of Magnolia Petroleum Company to become its first comptroller.

THOMAS G. TAYLOR, 43, district engineer of the Oil and Gas Leasing Division of the United States Geological Survey, Roswell, New Mexico, was killed in an automobile accident near Roswell February 25. He was a native of Michigan and graduated from Pennsylvania State College in 1921. He was employed for a time by the Pennsylvania State Geological Survey, and later took a position as petroleum engineer for the Empire Gas & Fuel Company, in Oklahoma. In 1927, he joined the staff of the U. S. Geological Survey in Oklahoma, and in 1929 was transferred to Roswell, where he remained, with the exception of two short assignments in Washington, until his death.

ISHMAEL PILKINGTON has been appointed head of the mapping department of Barnsdall Oil Company at Tulsa, succeeding B. B. Braley, transferred to Texarkana.

RALPH STEINMAN, Sinclair Prairie Oil Company, Tulsa, has been elected chairman of Chief Scouts Association of Oklahoma to succeed Paul Lyons, Stanolind Oil and Gas Company, retiring. W. R. Thawley, Tulsa Oil Corporation, and Sam Baird, Mid-Continent Petroleum Corporation, were elected vice chairman and secretary-treasurer respectively.

H. C. WIESS, president of Humble Oil and Refining Company, and W. M. Griffith, Sinton, vice president and general manager of Plymouth Oil Company, have been selected for special honors at the fifth annual South Texas Oil Men's Meeting under sponsorship of the South Texas Chamber of Commerce April 17 at San Antonio. H. R. Cullen of Houston was similarly honored in 1941.

W. K. WHITEFORD has been elected president of British American Oil Producing Company, and Toronto Pipe Line Company. H. C. Arnold has been elected to succeed Whiteford as executive vice president in charge of American operations of producing and pipe line companies. At the same time Whiteford was elected a director and executive vice president of British American Oil Company, Ltd., parent concern.

British American Oil Producing Company during the past 7 years has extended its operations in Mid-Continent, Rocky Mountain, California and Gulf Coast areas. The pipe line company expanded to include purchasing and transportation of oil in East Texas, North Texas, Cutbank, Montana, field and in Illinois and Indiana.

ED W. OWEN, president of the American Association of Petroleum Geologists, addressed the Shreveport Geological Society March 16. George Schneider, The Texas Company division geologist at New Orleans, and a past president of the Shreveport Geological Society, also addressed the meeting.

FRED P. SHAYES, Union Producing Company, Beeville, discussed "The Geology of the Agua Dulce and Stratton Fields, Nueces County, Texas," at the regular meeting of the South Texas Geological Society in San Antonio, March 20. He previously had presented the same paper to the society's Corpus Christi division.

EDWARD T. FISHWICK, senior vice president and director of the Worthington Pump and Machinery Corporation died March 15 at his home in Glen Ridge, New Jersey. He had been with the organization for 49 years.

W. F. HERBERT, petroleum engineer for The Texas Company, was elected president of the Petroleum Engineers' Club of Fort Worth, succeeding Clyde Robinson, Gulf Oil Corporation. Other officers elected are: Lewis Finch, Jr., Stanolind Oil & Gas Company, vice president and chairman of the membership committee; J. F. Adkisson, Sunray Oil Company, vice president and chairman of the program committee; John P. Klep, Sperry-Sun Well Surveying Company, vice president and chairman of entertainment committee; and Joe Byron, Gulf Oil Corporation, secretary-treasurer.

GUY E. CHAPMAN, president of Chapman Oil Company, Mt. Pleasant, Michigan, an officer in the Army reserve, has been called for active duty the last of March.

C. M. RADER has been appointed general sales manager and A. M. Smith chief engineer of Kobe, Incorporated, with headquarters in Huntington Park, California.

C. M. RADER

Rader was graduated from the civil engineering school of the University of Minnesota, after which he entered the officer's training course at Fort Snelling, Minnesota—later serving with the Engineers in France during 1917 and 1918. After the war he joined Mid-West Refining Company as district petroleum engineer covering that company's operations in Colorado, Wyoming and Montana. After a brief experience in general engineering practice in Florida, he joined Indian Territory Illuminating Oil Company in 1925 as petroleum engineer in Seminole. He later moved to Oklahoma City as assistant to the vice president and general manager. He joined Phillips Petroleum Company in 1931 at Oklahoma City. In 1937, Rader became associated with Kobe, Incorporated as Mid-Continent division manager. In his new capacity as general sales manager he will be responsible for field operating activities and sales.

A. M. SMITH

Smith has had long and practical field experience in hydraulic engineering. After completing his studies at Stanford University he was commissioned an ensign in the Naval Reserve. He joined C. J. Coberly in production and experimental work with Purox Company of California after the end of the war. From 1921 to 1929 Smith was active in hydraulic power construction and development work in California and in 1929 engaged in development of hydraulic machine tool feeds in Los Angeles and Detroit. He became associated with Kobe, Incorporated in 1934 and has, since that time, been directly involved in the service and development of hydraulic pumping equipment. In his new capacity he will have responsibility for the research, design, metallurgy and product engineering.

J. M. KIRBY, for many years associated with Standard Oil Company of California, has recently assumed the position of chief geologist, Standard Oil Company of British Columbia Limited, with headquarters at 700 Lancaster Building, Calgary, Alberta.

CLAUDE P. PARSONS, vice president of Halliburton Oil Well Cementing Company, addressed the student section of the American Institute of Mining and Metallurgical Engineers at the University of Texas recently on "Caliper Logging."

C. H. KEPLINGER, engineer for Shell Oil Company, has been transferred from Tulsa to Centralia, Illinois.

JOHN B. WARREN, JR., president of Warren Automatic Tool Company, Houston, has been appointed lieutenant in the United States Naval Reserve, for special service in the ordnance department. Warren graduated from the Rice Institute and later attended the University of California. He has worked for Humble Oil & Refining Company and Quintana Petroleum Company, and later with Warren Automatic Tool Company, in developing equipment for the oil industry, particularly, a device for automatically weighing and recording the weight of the drilling mud. He is expected to be assigned to active duty immediately.

FRED W. DUMRAESE, vice president and general manager of Texas Gulf Producing Company, Houston, was killed in a motor accident March 15. A native of Connecticut, he was employed by Sinclair Oil Company and worked as an independent operator before joining Texas Gulf Producing Company.

JAMES ANDERSON and John R. Suman, both vice presidents of Humble Oil & Refining Company, and Charles B. Wrightsman of Standard Oil Company of Kansas, are Houston oil men whose names appear in the recently issued new volume of Who's Who in America.

JAMES W. PARKER, vice president and chief engineer of The Detroit Edison Company and president of the American Society of Mechanical Engineers, will speak Thursday, March 26 before a Tulsa meeting of members of the society.

H. H. ARNOLD, JR., geologist, The Texas Company, Tulsa, has entered the Army Engineer Corps.

R. OTIS McCLINTOCK, president of the First National Bank and Trust Company, Tulsa, has been named liason officer between OPC, WPB and RFC.

W. F. GUYTON of the U. S. G. S. spoke on "The Results of Pumping Tests in the Carrizo Sand in the Lufkin Area" before the Houston Geological Society March 19. George Sawtelle gave a short summary of the work being done on civilian defense.

WIRT FRANKLIN, director of District No. 2 OPC, will attend a meeting in Lansing, March 24, following a proration hearing, to discuss regulations under M-68 both with Michigan officials and operators.

T. O. CRISSWELL, scout for The Carter Oil Company, Michigan division, will leave for Fort Knox and active Army duty the last of the month. Bert Brush will be transferred to Mt. Pleasant from Ponca City, Oklahoma, to replace Crisswell.

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Squeaks from the Bull Wheel

Prayerful Cooperation

In a footrace, a colored boy breasted the tape two inches ahead of his closest rival. An observer had noticed that the boy's lips were busy throughout the last two or three laps of the contest. Taking the runner aside, he said:

"Boy, I noticed you were talking while you ran."

"Ah was prayin', Mister."

"What were you saying in your prayer?"

"Ah was sayin', 'Lawd, You lif' 'em up, Ah'll put 'em down; You lif' 'em up, Ah'll put 'em down; You lif' 'em up, Ah'll put 'em down'—alla time Ah says dat, and youall sees whut happen!

Not Expensive

"We can't have any fun this evening. All I have in my pocket is some small change."

"Well, what do you think it takes to send my kid brother to the movies?" A five-dollar bill?"

Not Interesting

Nobody can say anything bad about Mary.

That's so. Let's talk about someone else.

Music Lovers

The top sergeant sang out just before the company was dismissed: "All those fond of music step two paces forward."

With visions of a soft job in the regimental band, half a dozen men stepped out.

The sergeant growled: "Now then, you six mugs get busy and carry that piano up to the top floor of the officers' quarters."

Worry Shifted

Daughter, didn't I tell you not to let that strange man come over to your apartment last night? You know it's things like that that cause me to worry.

Don't be ridiculous, Mother; I went over to his apartment. Now, let HIS mother worry.

Going

A father surprised his eleven-year-old with a bike for his birthday. Mother and father watched proudly as the boy rode round and round the block. On his first circuit he called "Hey, mom, no hands." Going past the second time, he shouted: "Hey, mom, no feet." The third time around, "Hey, mom, no teeth."

The Cautious Seldom Err

"Mother, do they have skyscrapers in heaven?"

"No dear, it takes engineers to build skyscrapers."

Poor Junior

"Why are you so bitter against your Uncle Nebuchadnezzar?"

"He lost all his money right after we named the baby for him."

Science Class

Which pine has the longest and sharpest needles?

The porcu.

Explaining Language

Two Cockney lads were discussing their jobs. One was telling how he'd just been taken on as a porter at an East End hotel, and that his employer had told him that he must treat the guests with tact.

"Tell me, Alf," he said, "do y'know wot this bloomin' tact is?"

"'Ere, now," Alf replied. "'Ere's wot tact is: I 'ad a blinkin' porter job m'self, at the Dorchester. And one fine day I was cleanin' up a bit, and I 'appens to open a bathroom door and there, nice as you please, is the Duchess—in the tub."

"So, wot do I do? I close the door quick, and I 'oller, 'Beg pardon, your Lordship!'"

"Now, that 'beg pardon' was politeness, but that 'your Lordship'—that was tact!"

Change of Pace

A colored preacher, standing before his flock, stared in dismay at the red splotch on his white starched bosom, made by an over-ripe tomato tossed by an unruly member of the congregation. He departed from his prepared sermon about the pearly gates.

"Brothers and sisters," he said softly, "there is gwine to be jes' about ten mo' minits of this hebben business. Then you is gwine to see all hell break loose!"

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& COOLERS
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

Notes for the Equipment Buyer and User

Steel Tubing

THE IMPERIAL BRASS MANUFACTURING COMPANY

The Imperial Brass Manufacturing Company, 1200 W. Harrison Street, Chicago, has announced a soft-temper-steel tubing, which is copper coated and tinned and can be used to replace copper tubing for many purposes. This tubing, known as Imperial Bundy Tinned Steel Tubing, is said to meet the requirements of a wide range of uses such as gasoline and oil lines, machine tool hydraulic and lubrication lines for oil burners, vacuum lines, refrigeration condensers, etc.

Tubing is copper coated inside and outside and has an additional tinned coating on the outside. The tinned coating, it is pointed out, makes it possible to use this tubing with regular compression, high-duty and type "D" fittings with assurance of a tight, leakproof joint. Tubing can also be used with flare and inverted flare fittings.

Tubing is soft tempered and can be bent, flared, coiled, soldered, brazed and welded. In flaring, the use of an Imperial 93-FB flaring tool, which is especially designed for this purpose, is recommended.

This tubing is stronger than copper tubing, the manufacturer claims, and has a higher resistance to vibration fatigue. Bursting strength ranges from 17,800 to 8700 pounds per square inch depending on size.

It is furnished in 25-foot coils in 1/8-, 3/16-, 1/4-, 5/16- and 3/8-inch O.D. sizes.

Radioactivity Well Logging Price Reductions Announced

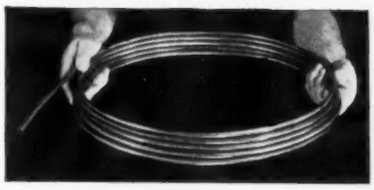
A substantial reduction in the price of radioactivity well logging through casing in all fields has been announced by Lane-Wells Company according to M. E. Montrose, vice president and general sales manager, who explains "The acceptance of this service has made it possible for us to keep our field units busy most of the time, making possible price reductions."

Radioactivity well logging records formation characteristics in open hole or through as many as three strings of casing. It is principally used to locate cased-off producing zones in wells drilled before electrical logging of open hole was generally used.

Los Angeles Nomads Induct New Officers

Los Angeles Chapter of Nomads, inducted new officers and regents at a meeting March 11. Several South American consuls were then introduced, and the meeting closed with a talk on the petroleum situation in the Near East.

Induction ceremonies were conducted by E. B. Fowks, retiring president, who introduced officers with a brief outline of their Nomad activities. In this reverse order were they presented: Roland E. Smith and T. C. Murphy, sergeant-at-arms and his assistant; Elmer L. Smith and D. B. Waite, treasurer and assistant treasurer; R. J. Eiche and J. C. Ballagh, secretary and assistant secretary; E. M. Rees, vice president; and W. F. Bettis, president. Joe Swaton then served as induction master for the national regents and presented T. E. Sutter and Fowks who are new regents.



Imperial Steel Tubing

Bart Gillespie presented consular guests. These were Manuel E. Hubner, consul general for California from Chile; A. Posse Rivas, consul for California from Venezuela; Juan M. Guiterrez, vice consul for California from Argentina; and Teodoro Gallac, secretary for the Argentine embassy in Ecuador. He touched upon the increased friendly relations between the North and South American peoples and remarked on the real understanding shown by the Nomads in their relations with South Americans.

The guest speaker, William T. Foran, spoke on "The Axis Squeaks for Oil." According to Foran, who spent five years on geological work for Iraq Petroleum Company and allied interests in the Near East, Hitler is not only squeaking for oil but is squawking for it. He believes that Germany's reserves are about gone and that with his present supply of oil limited to what he can get from Roumania, Poland, Albania, Germany and by synthetic means, Hitler is not going to be able to put on another high-powered blitz. He has planes and machines; but he has not enough oil to operate them on the big scale he has heretofore. What he wants is the oil from Iraq and Iran since he did not get that from the Baku region and other fields west of the Caspian Sea. Foran says he has to get that oil or else. Regarding Japan, he believes the Japs have about a two-year supply of oil without augmenting it from the conquered Indies.

Guests from foreign countries included Meade McCamey of N. K. P. M. Palembang, Sumatra; D. T. Sullivan and Fred E. Vandenburg from Colombia; R. H. McLelland of United British Oilfields, Trinidad, Point Fortin, Trinidad; C. A. Ricks from Venezuela; A. F. Driskill of Iraq Petroleum Company from Kirkuk, Iraq; Frank McAteer from Canada; and J. F. Foran of Cia Aurifera Nasca, Lima, Peru.

Earth Machinery

LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa, has issued a new booklet on equipment for use in the oil fields, called, "In The Oil Industry."

It is primarily a pictorial review of the production of oil, from drilling to the refinery. Trailbuilders, bulldozers and scrapers are shown building roads to new fields, clearing drilling sites, digging and filling slush pits, and moving equipment onto new locations. Illustrated are well-servicing jobs, also pipe line and refinery work.

Rubber

The B. F. Goodrich Company, Akron, Ohio, has just published the first four of a series of six pamphlets on "How to Get the Most Service Out of Industrial Rubber Products." The series is designed to assist in the program of rubber conservation.

All four of the first series of pamphlets treat belting—No. 1 "Transmission Belting," No. 2 "Conveyor Belting," No. 3 "V-Belt Drives," and No. 4 "Belt Salvage." All will be furnished free upon request or they can be requested by individual number and title.

Each of the subjects is subdivided into chapters dealing with the various angles of the topic, and is written in non-technical language so that shop foremen or maintenance men without formal technical education can understand how to best maintain and conserve the rubber now in their plants.

Pyrometric Equipment

Wheelco Instruments Company, Harrison and Peoria Streets, Chicago, has issued a six-page bulletin describing how the national defense program affects purchase, use and maintenance of temperature measuring and control instruments.

The bulletin has been issued to aid industrial instrument users to gain maximum life and efficiency from pyrometric equipment now installed and being installed. It will be supplemented by similar informational bulletins, if required.

Defense Bulletin No. 1 is designed to aid all users of pyrometers, regardless of make, to maintain equipment so it will operate efficiently and give uninterrupted service. It suggests substitute materials that may be employed in place of materials made critical because of the war program, and compares the properties of the original and substitute materials.

Water Columns

The Reliance Gauge Column Company, Cleveland, Ohio, has issued Catalog No. 414, describing safety water columns and accessories for working steam pressures up to 250 pounds. It is illustrated with dimension and selection tables and diagrammed installation instructions.

Geophysics in War

"Geophysics in War" is the title of Volume 37, Number 1 of the Colorado School of Mines Quarterly. This timely publication is by Dr. C. A. Heiland, professor of geophysics at the Colorado School of Mines and author of "Geophysical Exploration," one of the most recent authoritative books on the sub-

MORE PRECIOUS THAN PEARLS

All the pearls in the world couldn't stop a blitzkreig. It takes mechanized equipment, and that means oil — plenty of oil!

Ludlow Valves are doing heroic duty aiding delivery of America's oil. In pipeline, oil field and refinery operations, they're giving smooth, trouble-free service under the most severe conditions. Operating on the famous double-disc, parallel seat principle, developed and perfected by Ludlow, these rugged valves work smoothly, close securely—even after years in the open position. In emergencies or otherwise, Ludlow means value in valves. Send for Catalog.

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LUDLOW VALVES

SINCE 1866

ject of geophysics. Comprising nearly 100 pages, the discussion is divided into two major parts: (1) Military Operations and (2) Mineral Resources. Included are 47 photographs, diagrams, and charts; some taken from previous literature and others published for the first time.

All of the important uses of geophysics both in military operation and in the location of strategic and critical minerals are discussed.

The Quarterly may be obtained from the Department of Publications at the Colorado School of Mines at a cost of $1.00 the copy.

Letters to the Editor

CIO

DEAR SIRS:

Your editorial on the CIO in the March 16 issue is excellent. However, I would like to suggest that insufficient emphasis was placed on the closed shop danger. As I see it, even though we win a military victory, if in the process the closed shop contract is forced on the worker and on the employer, the privileges of the Constitution for which we are fighting will be lost. The closed shop is the end of the guarantees of the Bill of Rights for the individual worker.

A closed shop contract means:

1. To obtain the right to work and support his family, a worker must join a privately controlled organization whose use of his dues is not subject to his audit or that of his government.

2. He must join that organization whether be believes in its methods and principles or not. His only recourse is to refuse to join and starve.

3. He must retain membership in the union even though he knows or believes that its local officers are embezzlers or are disloyal to his government. His only means of protest is to quit the union and starve.

4. He must pay whatever admission fees, dues, and assessments on his wages that the labor exploiters may dictate. His recourse is to quit the union and starve.

5. He must vote as the labor exploiters (called "labor leaders" in Washington) dictate. His recourse is to vote otherwise and starve. (They have ways of finding how he votes.)

Where is the Bill of Rights under the above conditions? I feel that it is the duty of every American editor to bring these facts to the attention of the working people of this country before it is too late.

The management of essential industries in this country is already working 60 hours per week or more to find ways to produce. The workingman is willing to work that long at reasonable pay. Only a small parasitic group of labor exploiters whose profits depend on strife are tossing in the monkey wrench. The white heat of publicity is needed to play constantly on this brand of Tojo's helpers. Give it to 'em!

(Signed) J. E. E.

DEAR SIRS:

May I offer my heartiest congratulations upon your editorial in this week's OIL WEEKLY.

This editorial, I believe, should be printed in every newspaper in the country. Can't you devise some ways of *making* the *workmen* read it!

Again, congratulations!

(Signed) H. O. H.

Advertisers' Index

In the following index is shown only the advertisers having advertisements in this issue.

Wm. M. Barret, Inc. 61
*Bowen Co. of Texas, Inc. 60
*Broderick & Bascom Rope Co. ..... II Cover
Jo H. Cable 61
*Cameron Iron Works, Inc. 29
*Cardwell Manufacturing Co. 1
The Continental Supply Co. ..... IV Cover
Fort Worth Laboratories 61
General Motors Corp. 27
*H. P. Gott Manufacturing Co. 62
*Gray Tool Co. 6
*The Guiberson Corp. 31
Houston Laboratories 61
*Hughes Tool Co. ..... I Cover
Hyatt Bearings Division General Motors Corp. 27
*Johns-Manville Corp. ..... 55 and 59
M. M. Kinley Co. 60
Landis Machine Co. 3
*Link-Belt Co. 4
*Lucey Export Corp. 32
*Ludlow Valve Manufacturing Co. 64
Mississippi State Mineral Lease Commission 58
Hotel New Weston 59
*Oil City Brass Works, Inc. 60
*Otis Pressure Control, Inc. 2
*Pelican Well Tool & Supply Co. 57
*Standco Brake Lining Co. 61
The Thermoid Co. ..... III Cover
*Thornhill-Craver Co. 64
Tobin Brothers Accountants 61
Waugh Laboratories 37

* Indicates that detailed information on the manufacturer's products or services may be found in the 1942 edition of The Composite Catalog of Oil Field & Pipe Line Equipment.

Unibolt

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Clearing house for contraction and expansion in steam lines.

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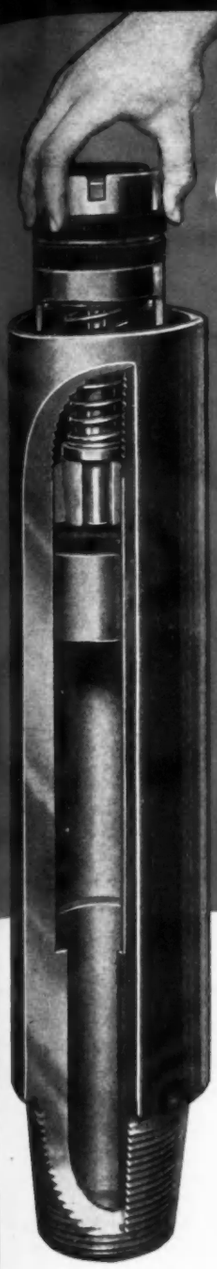


Conserve Rig Equipment and Materials

by using . . .

The BAKER BAKWIK DRILL PIPE FLOAT

It Affords These 5 Advantages:

1. It prevents plugging the bit.
2. It relieves weight on the derrick and rig equipment as well as on the lines and draw works.
3. It lengthens the life of wire lines and brake bands.
4. It minimizes—often prevents entirely—serious damage in the event the drilling string should part.
5. It prevents blow-outs through the drill pipe.

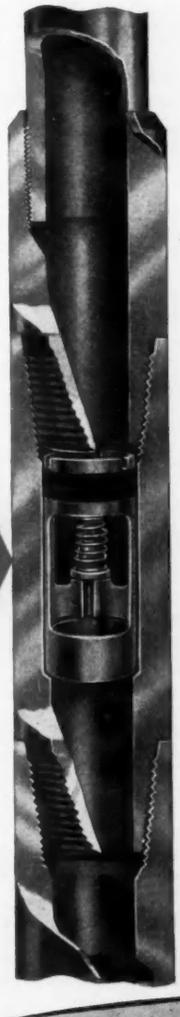
NO TOOLS OR SPECIAL WRENCHES ARE REQUIRED

The Baker Bakwik Model "B" Drill Pipe Float is made with a straight bore body and contains a simple Valve Assembly constructed entirely without threads, which is dropped into place by hand and held securely by the tool joint pin above it. When an unrestricted fluid passage is desired, the Valve assembly can be quickly and easily removed from the Float Body.

POSITIVE ACTING BACK-PRESSURE VALVE

At the slightest reversal of pressure, the Valve, with its recessed oil resistant Seal, instantly seats against the Valve Seat, creating a positive, leakproof seal. The two oil resistant Side Seals act against the Float Body to likewise form a positive seal.

The efficiency of the Baker Bakwik Drill Pipe Float has been proved in thousands of wells in oil fields throughout the world and is considered standard equipment where a positive back-pressure valve in drilling string is desired.



Showing Bakwik Drill Pipe Floats (complete with Valve Assembly) positioned in the drilling string

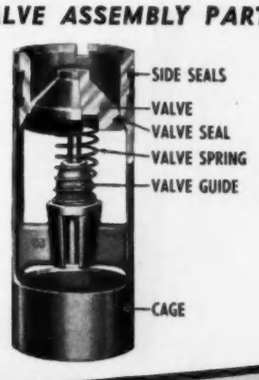
ALSO OF IMPORTANCE . . .

is the fact that the Baker Bakwik Drill Pipe Float can easily be placed at any position in the drilling string; that the unit is designed for long life; that the Valve Assembly can be quickly and easily serviced on the rig floor; and that replacement parts can be secured at practically any Supply Store or Baker Warehouse.

STRONG, SAFE VALVE ASSEMBLY CONSTRUCTION

Bakwik Drill Pipe Float Valve Assemblies are constructed of a minimum number of essential parts, each designed to give long, satisfactory service. The Cage is made of tough, abrasion-resistant steel, and the unrestricted opening through it is approximately the same area as the fluid passage through the tool joints. The Valve is made of special alloy iron, cast integral with the steel stem. Both Valve and Valve Seat are ground to a perfect fit. The Valve Cage is constructed of close grained grey iron, carefully machined for accuracy. The Valve Spring is designed to perform long, efficient service. The two Side Seals and one Valve Seal are made of oil resistant packing, and afford maximum wear under all operating conditions.

VALVE ASSEMBLY PARTS



SEE PAGE 293 of the 1942 BAKER or Composite Catalog

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Main Office and Factory: 6000 So. Boyle Avenue
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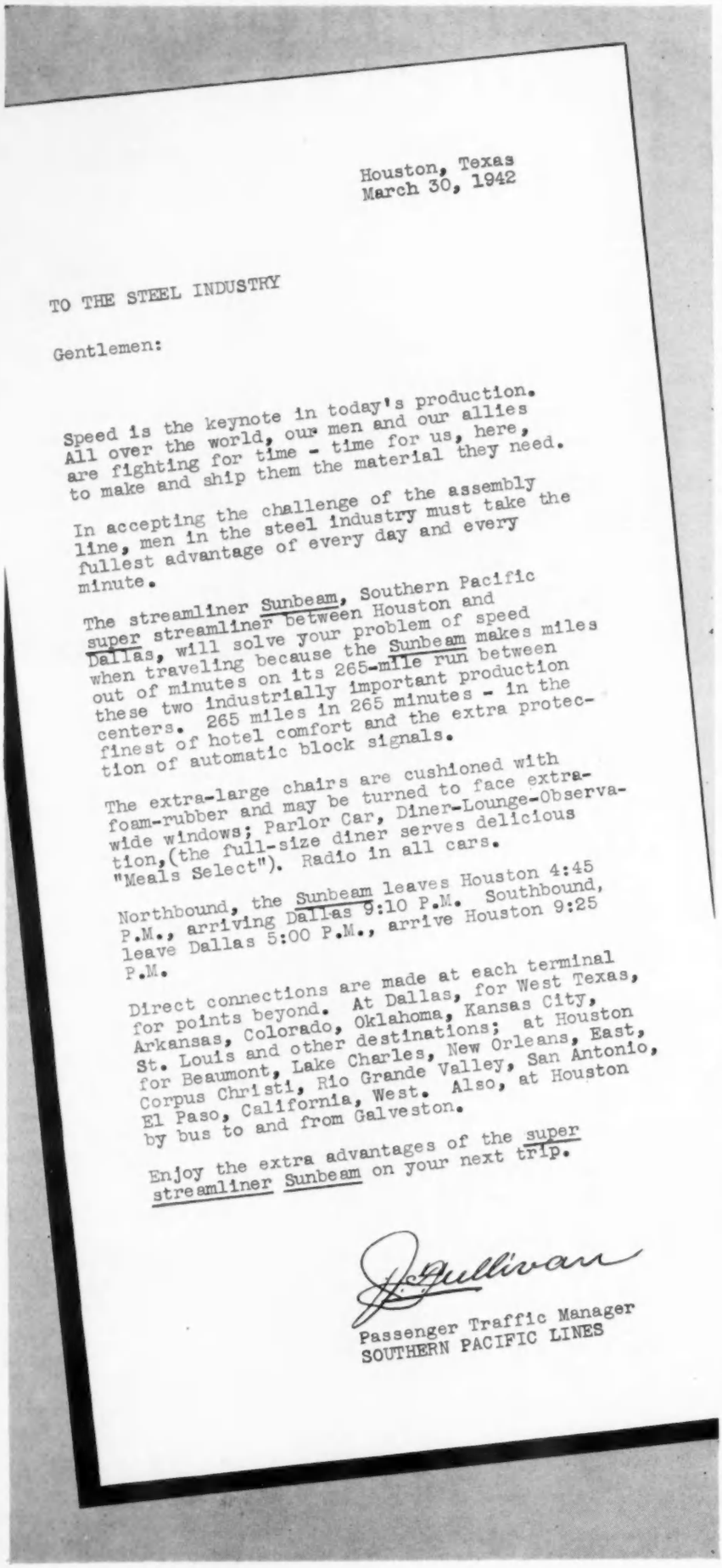
Central Division Office and Factory: 6023 Navigation Boulevard
P. O. Box 3048, Houston, Texas

Export Sales Office: 19 Rector Street, New York, N. Y.



Houston, Texas
March 30, 1942

TO THE STEEL INDUSTRY

Gentlemen:

Speed is the keynote in today's production. All over the world, our men and our allies are fighting for time - time for us, here, to make and ship them the material they need.

In accepting the challenge of the assembly line, men in the steel industry must take the fullest advantage of every day and every minute.

The streamliner Sunbeam, Southern Pacific super streamliner between Houston and Dallas, will solve your problem of speed when traveling because the Sunbeam makes miles out of minutes on its 265-mile run between these two industrially important production centers. 265 miles in 265 minutes - in the finest of hotel comfort and the extra protection of automatic block signals.

The extra-large chairs are cushioned with foam-rubber and may be turned to face extra-wide windows; Parlor Car, Diner-Lounge-Observation,(the full-size diner serves delicious "Meals Select"). Radio in all cars.

Northbound, the Sunbeam leaves Houston 4:45 P.M., arriving Dallas 9:10 P.M. Southbound, leave Dallas 5:00 P.M., arrive Houston 9:25 P.M.

Direct connections are made at each terminal for points beyond. At Dallas, for West Texas, Arkansas, Colorado, Oklahoma, Kansas City, St. Louis and other destinations; at Houston for Beaumont, Lake Charles, New Orleans, East, Corpus Christi, Rio Grande Valley, San Antonio, El Paso, California, West. Also, at Houston by bus to and from Galveston.

Enjoy the extra advantages of the super streamliner Sunbeam on your next trip.

J. Sullivan

Passenger Traffic Manager
SOUTHERN PACIFIC LINES

LOOKING AHEAD

. . . with the Editor

Fluorescence in Core Analysis

Fluorescence has emerged from the laboratory, offering many applications to core analysis, correlation, exploration, analysis and refining. And there may be other varied applications forthcoming from the persistent researchers.

Fluorescence is being used to analyze old cores, check old samples stored away for years in musty dusty bags, to examine lubricants and light stocks. This new equipment, in many instances, is installed in portable laboratories, thus permitting use in the field.

When fluorescence is excited in petroleum, a number of suitable ultra-violet sources become available commercially. Three types of lamps or bulbs are being used in field and laboratory. They are the mercury-vapor bulb, an ideal source of ultra-violet radiation; the "black-light" bulb which operates on a 110-volt alternating or direct current; and the argon-filled bulb which radiates ultra-violet through ionization of gas.

To examine cores or samples, mud or cuttings, the samples can be introduced into the fluorescence unit by means of a retractable shelf or drawer. When used in the field, a portion of the mud stream may be diverted through a viewing chamber.

There is no substitute for experience and practice in fluorescence work. There are fine shades of divergence between fluorescence colors that indicate specific occurrences. Only a minor change in the glow might be telltale to an experienced operator but be meaningless to the novice.

Its applications are limited but of consequence. The possibilities of additional applications are by no means exhausted. THE OIL WEEKLY will present soon details of fluorescence analysis as it reaches the practical development stage.

★ KEEP 'EM PRODUCING ★

THE OIL WEEKLY. Published every Monday. Entered as second class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.